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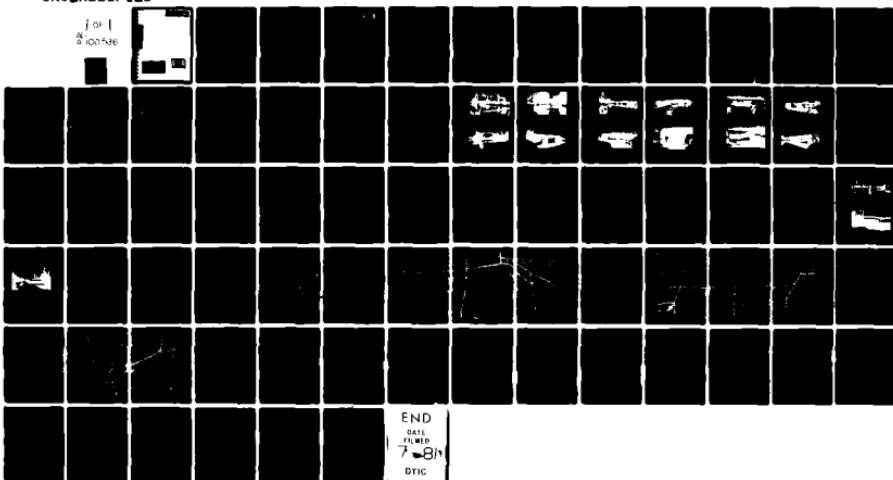
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FLOOD PLAIN INFORMATION: OATKA CREEK AND GENESEE RIVER: TOWN OF--ETC(U)
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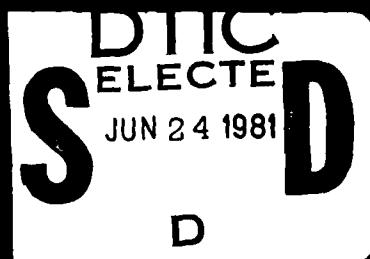
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PREFACE

This report on the Oatka Creek and Genesee River flood plains within the Town of Wheatland has been prepared because a knowledge of flood potential and flood hazards is important in land use planning and for management decisions concerning flood plain utilization. It includes a history of flooding and identifies those areas that are subject to possible future floods. Special emphasis is given to these possible future floods through maps, photographs, profiles, and cross sections. The report does not provide solutions to flood problems; however, it does furnish a suitable basis for the adoption of land use controls to guide flood plain development and thereby prevent intensification of the loss problems. It will also aid in the identification of other flood damage reduction techniques such as works to modify flooding and adjustments including flood proofing which might be embodied in a unified flood plain management [FPM] program. Other FPM program studies-- those of environmental attributes and the current and future land use role of the flood plain as part of its surroundings--would also profit from this information.

Under the continuing authority provided in Section 206 of the 1960 Flood Control Act as amended, this report was prepared in response to the request of the Town of Wheatland.

Upon request, the Corps of Engineers, Buffalo District Office, will provide technical assistance to federal, state, and local agencies in the interpretation and use of the data presented as well as planning guidance and further assistance, including the development of additional technical information.

BACKGROUND INFORMATION

Flood Plain Studied

Those sections of the Oatka Creek and Genesee River included in this study are shown on the Basin map, Plate I. Drainage areas contributing to runoff at locations in or near the study area are shown in Table 1.

TABLE 1 - DRAINAGE AREAS

Location	Drainage area sq. mi.
Genesee River R. R. bridge at mouth	2,466
Genesee River U.S.G.S. gage at Driving Park Ave.	2,453
Genesee River Downstream of Oatka Creek	2,191
Genesee River U.S.G.S. gage at Avon	1,663
Oatka Creek at Confluence with Genesee River	215
Oatka Creek at Garbutt	204

The area studied basically includes those sections of the flood plains along Oatka Creek and the west bank of the Genesee River that are within the Town of Wheatland, Monroe County, N.Y. The portion of the Genesee River within the study area extends from mile point 20.8 at the Chili-Wheatland Town Line to mile point 25.2 at the Monroe-Livingston County Line, a distance of 4.4 miles. The portion of Oatka Creek within the study area extends from mile point 0.0 at its confluence with the Genesee River to mile point 11.3 at the Genesee-Monroe County Line.

Settlement

The word Genesee is of Indian origin, meaning "pleasant valley." The basin was first permanently inhabited by the Algonquin Indians who were gradually displaced by the Eries, Andastes, Attiwandaronks and Senecas. The Eries and Andastes dwelled at the headwaters of the river. The Attiwandaronk or Neuter Nation occupied the area west of the river while the domain of the Senecas of the powerful Iroquois confederacy encompassed the basin east of the river. Eventually, the Iroquois made war on and destroyed the aforementioned tribes, resulting in Seneca domination of the basin. It was during these times that the Genesee River Valley was discovered by white men. In 1615, a Frenchman named Etienne Brule, attached to one of Champlain's expeditions, is

believed to have been the first European to traverse the basin from north to south. In 1779 in retaliation for massacres and harassments of colonists by English Loyalists and Indians, Washington sent a punitive expedition under the command of General Sullivan into Western New York. The army, after invading the Finger Lakes Region, turned west and marched into the Genesee Valley, destroying Indian villages and crops along the way. This expedition permanently broke the power of the Iroquois in New York State and opened the Genesee Valley to permanent colonial settlement.

In 1788, the study area was included as part of the famous Phelps and Gorham Purchase. During this time, the Town of Wheatland was part of a large section of Western New York State which was originally called the Town of Northampton.

Still later, it was a part of the Town of Caledonia and for a short time was known as Inverness. Finally, on April 3, 1821, the Town of Wheatland was established officially. The name was aptly chosen due to the fact that Monroe and Livingston Counties were described in the 1850 U.S. Census as the greatest wheat producing counties in the United States.

Prominent early settlers include Ebenezer "Indian Allen", the first white settler in Wheatland; the Peter Sheffers I and II and Isaac Scott who purchased what was to become the Village of Scottsville from the Wadsworths.

The first log school was built in Scottsville in 1806 near what is now the intersection of Rochester Street and North Road. The Genesee River was used in the early days for passenger and freight hauling between Rochester and Geneseo. However, in 1840, upon the completion of the Genesee Valley Canal between Mt. Morris and Rochester, river traffic declined. Within the Town of Wheatland the canal generally followed the alignment of the present Penn-Central Railroad track.

The Hamlet of Mumford was formerly known as McVean's Corners and later Slab City and in 1879 took its present name.

Weather

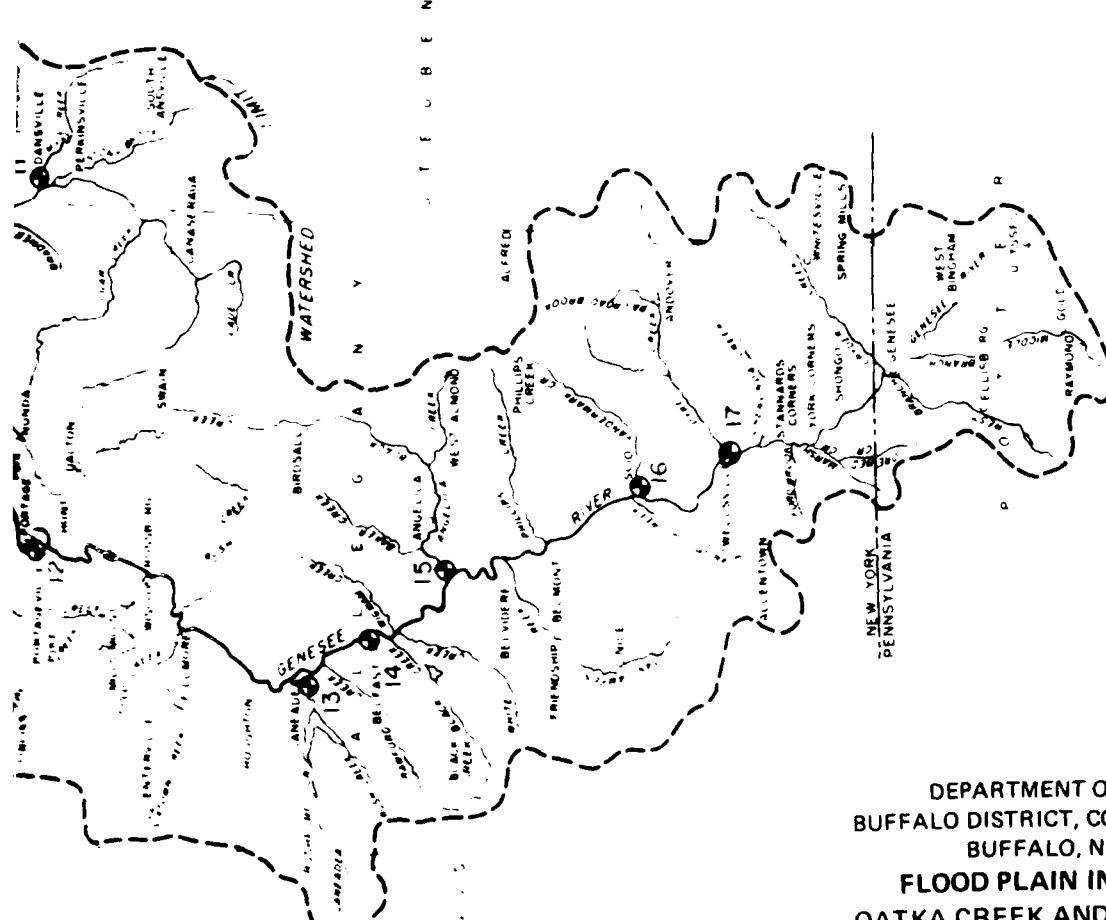
There are 23 precipitation stations in or adjacent to the Genesee Basin, 10 of which are in the lower part of the basin, the remainder in the upper. The entire Genesee watershed is subject to local storms of the cloudburst type. However, from a large scale

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COVERED BY THIS STUDY.

U.S.G.S. WATER-STAGE
RECORDING GAGE.

1. ROCHESTER
2. CHURCHVILLE
3. GARBUTT
4. WARSAW
5. HONEOYE FALLS
6. AVON
7. JONES BRIDGE
8. SHAKERS CROSSING
9. SONYEA (DISCONTINUED)
10. GROVELAND (DISCONTINUED)
11. DANSVILLE
12. PORTAGEVILLE
13. CANEADEA
14. BELFAST (DISCONTINUED)
15. ANGELICA (DISCONTINUED)
16. SCIO (DISCONTINUED)
17. WELLSVILLE



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DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
BUFFALO, NEW YORK
FLOOD PLAIN INFORMATION
OATKA CREEK AND GENESEE RIVER
TOWN OF WHEATLAND

BASIN MAP
APRIL 1973

flood standpoint, the single most important element to the makeup of weather and climate in the Genesee River Basin is its proximity to the so-called St. Lawrence storm track. Cyclonic systems progressing from the interior to the Atlantic Ocean through the St. Lawrence Valley transport moisture from the Gulf of Mexico which is precipitated enroute. This is the source of a large portion of the rainfall in the Genesee Valley area, and practically all of the major snow storms.

Population

The study area located in the southwest corner of Monroe County, is a rural community with two low density urban centers -- The Village of Scottsville and the Hamlet of Mumford. Population predictions for the Town and Village anticipate rather slow rates of increase through the next 20 years. However, the Hamlets of Garbutt and Wheatland Center, along with the Hamlet of Mumford and the Village of Scottsville are adjacent to both Oatka Creek and N.Y.S. Route 383, the Main East-West Route through the area, and as such present a strong potential for linear development. The possibility for such development is further enhanced by the existence of the public water supply along Route 383, and the area's proximity to the planned community of Riverton. This potential for growth parallel to Oatka Creek points out the need for flood plain regulation prior to further development within the areas subject to flooding.

Existing Development

Except for those areas in and adjacent to the Village of Scottsville, the Hamlet of Mumford and the manufacturing-mining complex at Wheatland Center Road, the character of the study area flood plain has remained mostly agricultural or vacant in nature. The existing land use is shown on Plate 2.

The Streams and Their Valleys

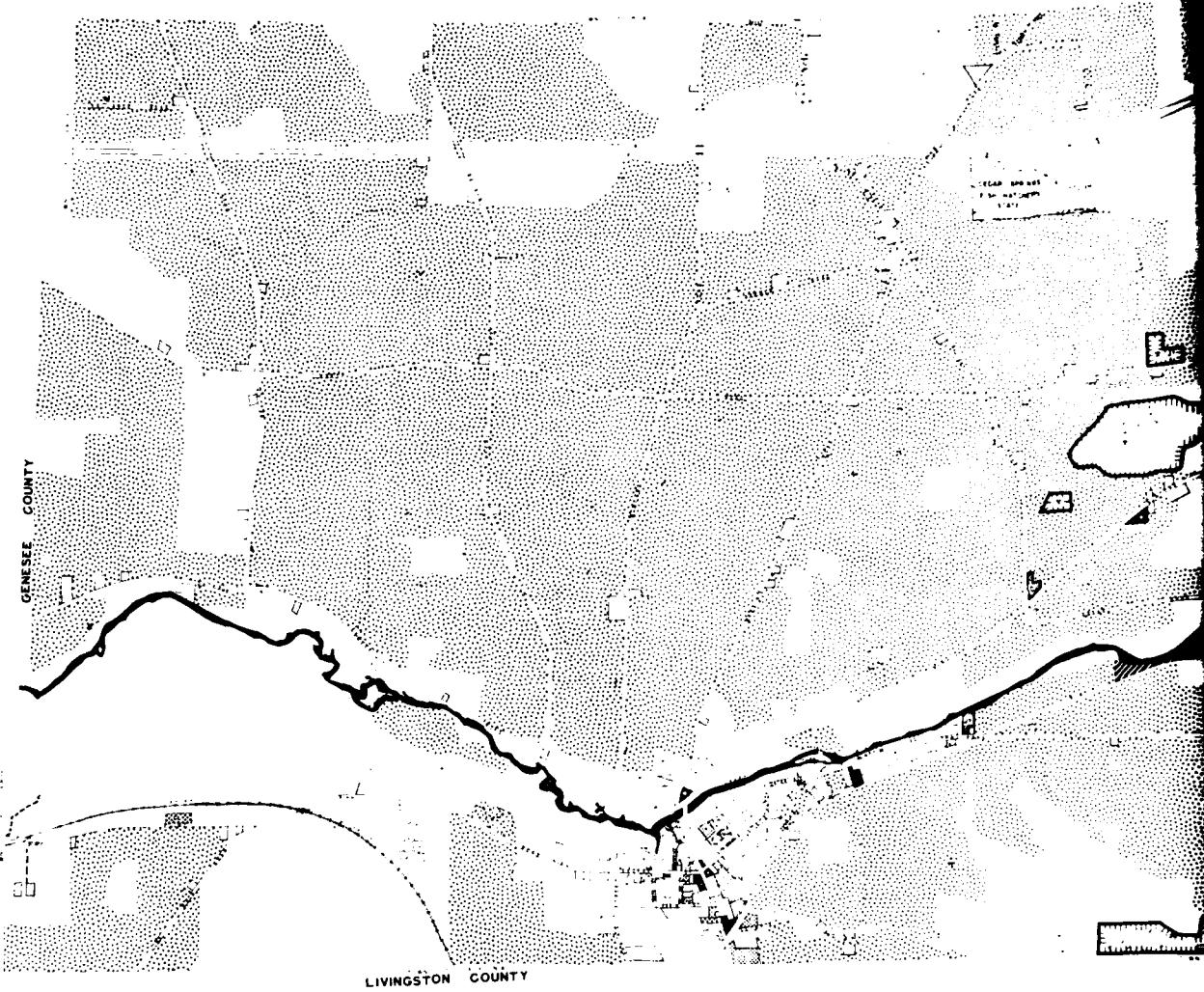
The Genesee River Basin--Rising at an elevation of 2,500 feet in the Allegheny Mountains of Potter County, Pa., a few miles south of the New York-Pennsylvania boundary, the Genesee River or "Pleasant Banks" as interpreted from the original Indian word, flows northward for approximately 40 miles to Candeadea where it turns generally northeast to its mouth on Lake Ontario at an elevation of about 247 feet. The basin comprises parts of Potter County, Pa., and the counties of Allegheny, Steuben, Cattaraugus, Wyoming, Livingston, Ontario, Genesee, Orleans, and Monroe in New York. The length of the river, following bends, is about 157 miles. The basin has

a length in a north-south direction of about 100 miles and a width of about 40 miles. In general, the basin has the shape of an elm leaf, having its broadest point about 30 miles from Lake Ontario with the stem at the lake. The total drainage area of the basin is about 2,470 square miles of which about 1,080 square miles are upstream of Mount Morris Dam and 2,200 square miles are upstream of and including the study area.

The relief of the Genesee Valley consists of a series of terraces descending northward from the Allegheny Plateau to Lake Ontario, separated by northward facing escarpments. The topography of the southern portion of the basin, upstream of Mount Morris Dam, is relatively steep and rugged, while the northern portion of the basin is gently rolling. Geologically, the upper basin is in a stage of young maturity, while the lower basin has reached an aged stage with much curving, a wide flood plain, and numerous oxbows. At Letchworth State Park, immediately upstream of Mount Morris Dam, the river drops in a series of cataracts having an aggregate fall of 312 feet, flowing through a deep gorge cut in rock which has been termed "The Grand Canyon of the East."

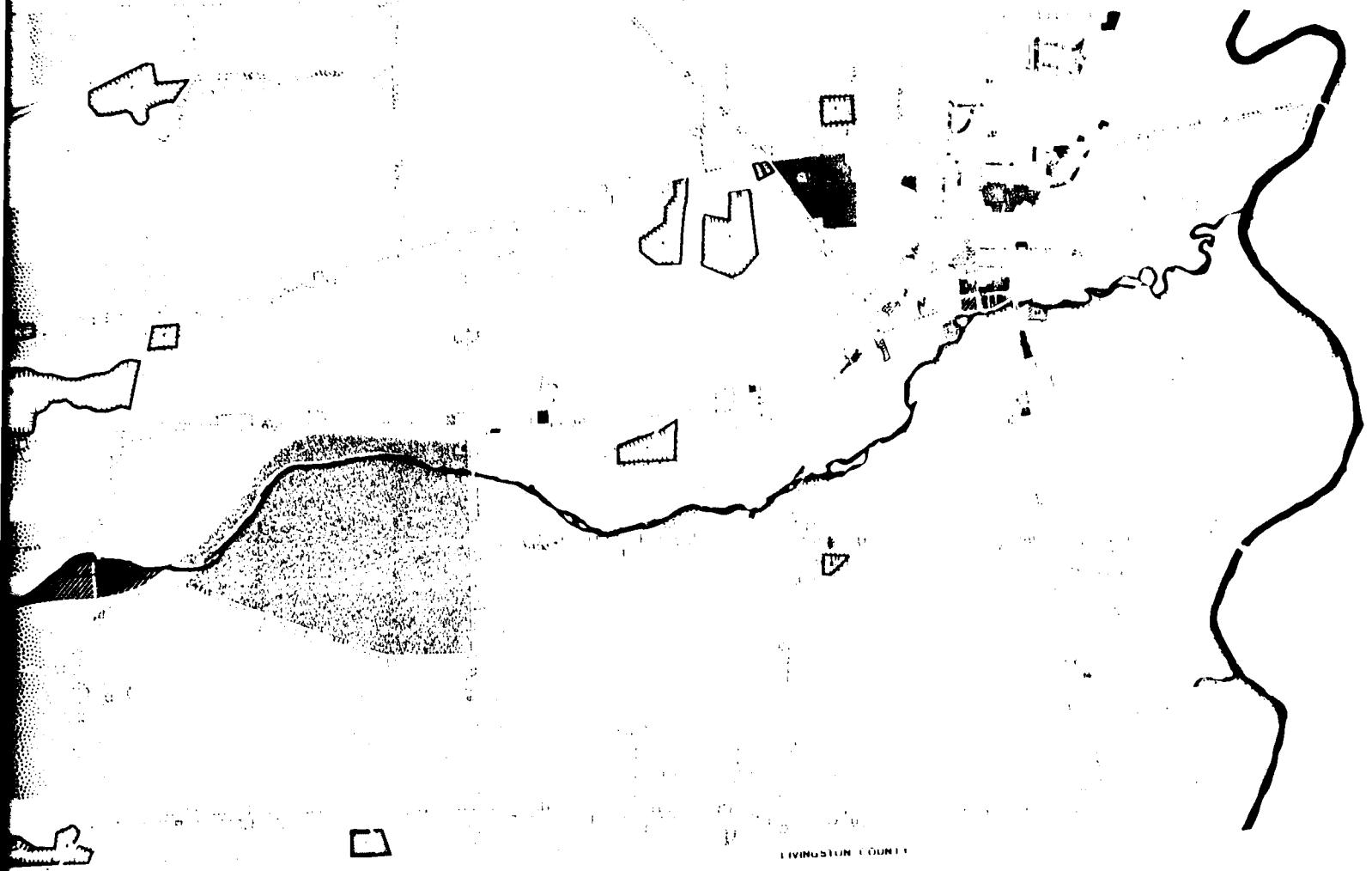
It then flows through narrow valleys and gorges to enter the broad lower Genesee Valley at the Village of Mount Morris. From this point to the City of Rochester, the river flows in a winding and meandering course through a flat alluvial valley from 1 to 3 miles wide and 30 miles long, of which the study area is part of. As it passes through the study area the river channel slopes at less than one-tenth of a foot per mile. Within the City of Rochester, the river again drops in a series of cataracts, termed the Niagara Escarpment, having an aggregate fall of 234 feet, and thence proceeds to Lake Ontario.

The Oatka Basin--Oatka Creek or "Opening" as interpreted from the original Indian word, totals 58 miles in length following bends, and drains a basin of 215 square miles in forming the third largest tributary to the Genesee River. It rises at an elevation of 1,700 feet about 5.5 miles south of the Village of Warsaw in Wyoming County and enters the Genesee River at an elevation of 517 feet at mile point 22.20. In the upstream reaches the creek flows through the Warsaw Valley which varies from one-quarter (1/4) mile to one mile in width. This valley has steep sides and at one section drops 500 feet in a horizontal distance of one-quarter (1/4) mile. The valley extends northeast for about 14 miles and then becomes more open, extending northeasterly to the Village of LeRoy. From LeRoy Oatka Creek flows northward, descending 220 feet in a distance of 3 miles and then turns eastward through the study area to its confluence with the Genesee River.

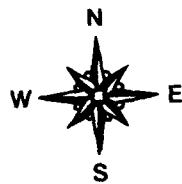


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[Symbol: Open square with diagonal line]	TRAILERS AND TRAILER PARKS	[Symbol: Open square with diagonal line]	FREIGHT TERMINALS
[Symbol: Open square with diagonal line]	RETAIL STORES AND PERSONAL SERVICE SHOPS	[Symbol: Open square with diagonal line]	JUNK YARDS (JY) AND DUMPS (D)
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[Symbol: Open square with diagonal line]	GARDEN STORES AND COMMERCIAL GREENHOUSES	[Symbol: Open square with diagonal line]	MANUFACTURING - NON-DURABLE GOODS
[Symbol: Open square with diagonal line]	OFFICES	[Symbol: Open square with diagonal line]	MANUFACTURING - DURABLE GOODS
[Symbol: Open square with diagonal line]	HOTELS AND MOTELS	[Symbol: Open square with diagonal line]	PUBLIC BUILDINGS - SCHOOL (S), ADMINISTRATION (A), POLICE FIRE STATION (F), LIBRARY (L), POST OFFICE (PO), ETC.
[Symbol: Open square with diagonal line]	COMMERCIAL RECREATION - OUTDOOR		
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DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
BUFFALO, NEW YORK
FLOOD PLAIN INFORMATION
OATKA CREEK AND GENESEE RIVER

TOWN OF WHEATLAND
LAND USE MAP

FLOOD SITUATION

Data Sources and Records

Records of discharge are available for the Genesee River at Rochester from 1904 to the present. The original staff gage at the Elmwood Avenue bridge was replaced by an automatic water-stage recorder in 1910. In 1919 the gaging location was moved to its present location at the Driving Park Bridge. Additionally, an automatic water-stage recorder has been located at Routes 5 and 20 near Avon since August, 1955.

Records of stage and discharge of Oatka Creek at Union Street near Garbutt within the study area have been collected since 1945.

To supplement the records at the gaging stations, newspaper files, historical documents, and records were searched for information concerning past floods. These records have developed a knowledge of floods which have occurred on the Genesee River and Oatka Creek.

Discharges for floods measured at the gaging station on the Genesee River at the Driving Park bridge and crest stages and discharges for measured floods at the Oatka Creek gaging station at Garbutt are shown in Tables 2 and 3.

TABLE 2 - FLOOD DISCHARGES - GENESEE RIVER AT DRIVING PARK

Date	Discharge cfs
June 25, 1972	31,300 (c)
February 14, 1965	19,300
March 15, 1964	16,600
March 18, 1963	21,500
April 18, 1960	18,200
March 31, 1960	25,800
April 2, 1959	17,700
April 8, 1957	17,000
June 5, 1956	17,800
April 30, 1956	17,500
March 8, 1956	24,300
December 26, 1955	17,500
March 2, 1955	19,100
February 17, 1954	17,500
March 25, 1953	17,100
March 12, 1952	17,700

TABLE 3 - MEASURED FLOOD DISCHARGES ON OATKA CREEK AT GARBUZZ*

Date	Estimated Peak Discharge Discharge	Stage(a) Feet	Elevation(b) U.S.C. & G.S. Datum
January 7, 1946	2,830	6.17	567.52
March 25, 1947	2,810	6.15	567.04
April 6, 1947	3,680	6.79	567.68
March 29, 1950	6,080	8.17	569.41
March 12, 1952	2,960	6.27	567.13
March 2, 1955	5,310	7.77	568.86
March 8, 1956	5,880	8.07	569.27
January 24, 1957	3,500	6.66	567.54
April 3, 1959	3,240	6.48	567.34
March 31, 1960	7,050	8.64	569.53
April 26, 1961	3,090	6.37	567.23
June 24, 1972	3,830 (c)	6.89	567.78

* The term flood, as used in this table refers to only those flows equaling or exceeding a stage of 6.1 feet.

(a) Stage is based on current (November 16, 1970) rating curve.

(b) Elevation existing at time of flood.

(c) Provisional from the U. S. Geological Survey.

Field surveys were performed to obtain the necessary hydraulic information, and field investigations were conducted to obtain essential flood plain information such as high water marks, flow obstructions, and existing and planned development.

Information obtained in the field was then studied and analyzed to produce computational data which could be utilized in a Computer Program to determine flood stages.

Flood Season and Flood Characteristics

Major floods have occurred in the study reaches of Oatka Creek and the Genesee River during all seasons of the year.

Floods within the Oatka Creek and Genesee River basins result when excessive overland runoff concentrates in the tributaries. Flood flows so formed in the smaller channels, in turn build up the parent stream flood crests or peak discharges whose magnitudes are the products of coincidence in the arrival of the tributary crests. Climatic conditions producing these excessive runoffs are twofold: (1) flood producing

storms are usually the result of a collision, over the watershed, of a large mass of warm moisture-laden air from the south Atlantic or Gulf Regions with a mass of air of low temperature from the north; and, (2) spring floods which are normally the result of sharp rises in temperature which melt the snow cover of the basin, being frequently accompanied by rains.

Factors Affecting Flooding and Its Impact

Morphologic-Hydraulic Conditions--It is impossible to separate flood plains from the rivers themselves in order to consider their hydrologic and hydraulic aspects. All streams have flood plains along their entire length, although their width may vary from zero, in reaches where the stream banks have perpendicular side slopes, such as at Letchworth Gorge, to thousands of feet in nearly flat plains, as occurs to an extent through the study area. The behavior of the Genesee River and Oatka Creek during flood stages is determined not only by the physical properties of the normal flow channels, but also by the physical properties of the respective flood plains.

The physical characteristics of the Genesee River and Oatka Creek Drainage Basins vary considerably between upstream and downstream sections. The upper portions of the Genesee basin have relatively steep gradients. In these areas, floods will tend to exhibit more rapidly rising and falling hydrographs. The upstream flood plains are relatively narrow with reduced storage and high velocities wherein large quantities of debris and sediment may be transported for considerable distances. As the river proceeds downstream the gradients decrease, the flood plains widen and the hydrographs exhibit longer periods of rise, broader peaks, and a longer period of fall.

Under natural conditions flood waters in excess of channel capacity are intended to spread out over valley lands and build the flood plains by depositing sediment, thereby relieving the river channels of part of their load. An important aspect of overbank flow in the Genesee Valley is that it attenuates and reduces the downstream flood crests, thereby reducing the threat of floods to the City of Rochester and other urbanized downstream localities. Albeit, since construction of the Mount Morris Dam, flood threats to the City of Rochester have been significantly reduced, there still exists the distinct possibility that a storm of such magnitude may arise to cause the exceedence of the Dam's capacity. If such storms occurred downstream of the Dam, much of the Dam's storage capacity would be useless. Thus, all future encroachments onto the study area floodways, along with their necessary channel capacity improvements, should be carefully studied as to their impact not only upon the immediate flood plain situation but also with regard to their impact upon the future flood stages in the highly urbanized downstream localities.

Obstructions to floodflows--Natural obstructions to floodflows include trees, brush, and other vegetation growing along the stream banks in floodway areas. Man-made encroachments on or over the streams such as dams, bridges, and culverts can also create more extensive flooding than would otherwise occur. Representative bridges, a dam and some obstructions to floodflows are shown in Figures 1 through 12.

During floods, trees, brush, and other vegetation growing in floodways impede floodflows, thus creating backwater and increased flood heights. Trees and other debris may be washed away and carried downstream to collect on bridges and other obstructions to flow. As floodflow increases, masses of debris break loose and a wall of water and debris surges downstream until another obstruction is encountered. Debris may collect against a bridge until the load exceeds its structural capacity and the bridge is destroyed. The limited capacity of obstructive bridges or culverts, debris plugs at the culvert mouth or a combination of these factors retard floodflows and result in flooding upstream, erosion around the culvert entrance and bridge approach embankments and possible damage to the overlying roadbed.

In general, obstructions restrict floodflows and result in overbank flows and unpredictable areas of flooding, destruction of or damage to bridges and culverts, and, and increased velocity of flow immediately downstream. It is impossible to predict the degree or location of the accumulation of debris; therefore, for the purposes of this report, it was necessary to assume that there would be no accumulation of debris to clog any of the bridge or culvert openings in the development of the flood profiles.



Figure 1 – View of upstream side of Scottsville - Henrietta Road bridge, river mile point 21.70. Photo taken February 1973.



Figure 2 – View of upstream side of Rush Road bridge, river mile point 23.90. Photo taken February 1973.



Figure 3 – View of upstream side of Penn-Central R.R. bridge, creek mile point 1.30. Photo taken February 1973.



Figure 4 – View of upstream side of Canawaugus Road bridge, creek mile point 1.35. Photo taken February 1973.



Figure 5 – View of upstream side of Bowerman Road bridge, creek mile point 2.60. Photo taken February 1973.



Figure 6 – View of upstream side of Union Street bridge, creek mile point 4.08. Photo taken February 1973.



Figure 7 – View of upstream side of private access bridge, creek mile point 4.70. Photo taken February 1973.



Figure 8 – View of upstream side of Baltimore & Ohio R.R. bridge, creek mile point 5.45. Photo taken February 1973.



Figure 9 – View of downstream side of Wheatland Center Road bridge, creek mile point 5.75. Photo taken February 1973.



Figure 10.– View of downstream side of Wheatland Center Road Dam, creek mile point 5.85. Photo taken February 1973.



Figure 11 – View of upstream side of State Street (Twin Bridges) bridge, creek mile point 7.62. Photo taken February 1973.



Figure 4 – View of upstream side of Canauraugus Road bridge, creek mile point 1.35. Photo taken February 1973.

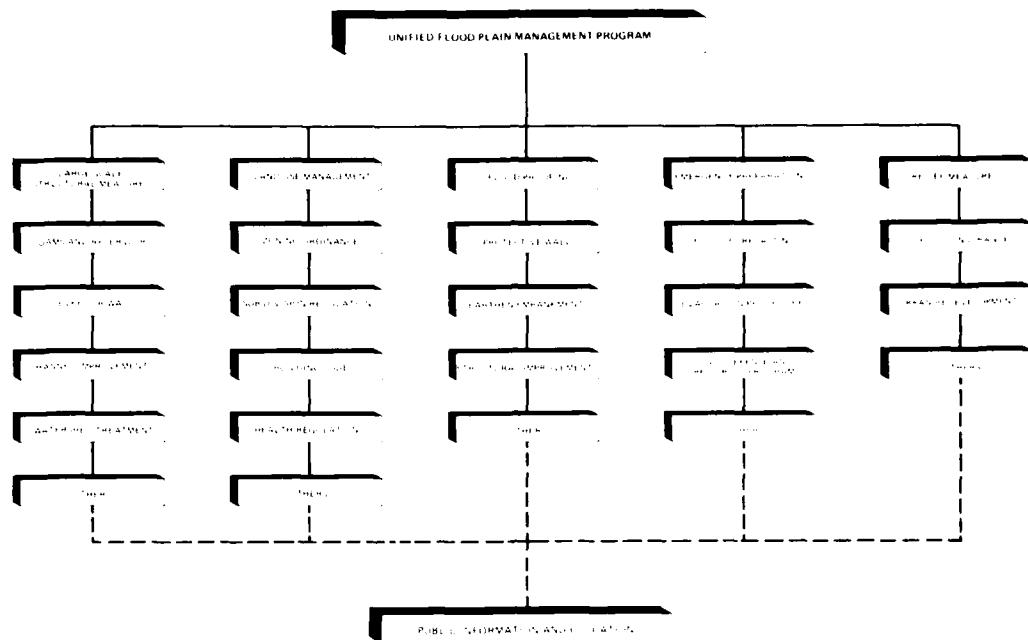
Unified Flood Plain Management Programs

Historically, the alleviation of flood damage has been accomplished almost exclusively by the construction of protective works such as reservoirs, channel improvements, and flood walls and levees. However, in spite of the billions of dollars that have already been spent for the construction of well designed and efficient flood control works, annual flood damages continue to accelerate, because the number of persons and structures occupying flood prone lands is increasing at a rate more rapid than at which protective works can be provided.

The trend towards, basically unplanned use of flood plains, has within the past 20 years, forced a reassessment of the entire flood situation, resulting in the broadened concept of unified flood plain management programs. A unified flood plain management program is basically composed of five overlapping components. The first being conventional structural measures including various combinations of reservoir storage, levees, and channel improvement. The second is land use management or deciding what kinds of development should or should not be located within a specific flood prone area. The third is flood proofing or deciding how to arrange, design, use, and maintain those developments which do locate on the flood plain so as to minimize losses when floods do occur. The fourth is the development of adequate emergency preparations including flood forecasting and temporary evacuation procedures. The fifth is the establishment of adequate flood insurance and catastrophe-aftermath relief measures to insure against total collapse of an area's economy and to provide the individuals and businesses affected sufficient means with which to rebuild and re-establish.

This modern concept of unified flood plain management can be reduced to "nutshell" form and expressed as the realization that in many instances it is far better for man to adjust to nature rather than to have nature adjust to man.

The U.S. Army Corps of Engineers has prepared, and will distribute on request to State, County, and local governments for public dissemination, copies of pamphlets entitled "Guidelines for Reducing Flood Damages" and "Introduction to Flood Proofing." The combination of data presented in this report and the pamphlets will provide general guidelines for flood damage reduction to future development within the Oatka Creek and Genesee River flood plains.



Flood Control Works--The damaging effects of the flooding Genesee River have been greatly reduced since the completion of the Mount Morris Dam in November of 1951. The Dam, constructed at a cost of \$25,000,000, provides temporary storage of the flood waters which had annually caused much damage to farm and residential areas in the 67 miles of valley between Mount Morris and Rochester. Since its completion, it has resulted in the prevention of at least \$90,000,000 of damage along the valley and within the City of Rochester. Under normal operations the reservoir will hold only flood flow in excess of the capacity of the river channel. Stored flood waters are released gradually through nine conduits, each having a capacity of up to 2,700 cfs, resulting in a maximum controlled release of approximately 24,000 cfs.

Honeoye Creek has its confluence with the Genesee River just upstream of the study area at mile point 26.6. The two reservoirs on Honeoye Creek at Hemlock and Canadice Lakes are used primarily by the City of Rochester for water supply. However, although these reservoirs are not specifically used for flood control, the high spring runoff is retained for summer usage thereby attenuating the inflows to the Genesee River during critically potential flood periods.

The corps of Engineers has completed the design of a flood control project in the Red Creek Basin, which is on the east bank of the Genesee River and immediately downstream of the study area. The proposed project would include a flood barrier on the east bank of the Genesee River to minimize over-bank flow during periods of excessive flood flow.

Flood Warning and Forecasting--The nomenclature FC network 39 is a cooperative effort of the Buffalo District, Corps of Engineers and the U.S. Weather Bureau at Rochester to predict flooding in the Genesee River Basin. The heart of the system is the 23 precipitation and 12 stream gages located strategically within the Genesee River Basin. As soon as the cumulative rainfall in a 24 hour period equals 0.5 inches the network is notified and flood forecasting techniques are placed in operation. The combined input of information results in the logical regulation of Mount Morris Dam and allows for the prediction of flood crest elevations and their estimated time of occurrence. As was evidenced during the recent high stage flood flows precipitated by Hurricane Agnes this excellent warning system enables communities and individuals to protective measures for their lands and property and provides sufficient time to plan and implement an orderly evacuation if necessary.

Flood Plain Regulations--Flood plain regulation is the general term applied to the full range of ordinances and other means designed to control land use and construction within flood prone areas. The term encompasses zoning ordinances, subdivision regulations, building and housing codes, encroachment line statutes, open area regulations, and other similar methods of management affecting the use and development of flood prone areas.

It is important to remember that flood plain land use management does not mean that such lands are not to be used advantageously; to the contrary, flood plain land use management seeks the best rather than the least use of flood plain lands. By using the flood plain maps, the water surface profiles and the cross-sections contained in this report as a guide, limited development, dependent upon the frequency of flooding, can be allowed in the flood plain. The elevations shown on the profiles should be used to determine flood heights because they are more accurate than the flooded outlines. Units of low damage construction should be stressed during future development in areas which are susceptible to frequent flooding. If future high value development is considered in areas subject to frequent flooding and it is found uneconomical to elevate the land in these areas, means of flood proofing the structures should be given careful consideration.

Development Zones--A flood plain can be conceptualized as consisting of two useful zones. The first being the designated floodway or that cross-sectional area required for carrying or discharging the anticipated flood waters. Velocities are greatest and most damaging in the floodway. Proper regulation limits flood damage potential within this area by specifying uses that are not subject to relatively serious upset or damage by flooding, and by providing that the necessary flow conveying capability of the floodway is essentially maintained in order that additional adjacent areas be spared significant inundation. Uses which are acceptable for floodways include parks, parking areas, open space, etc. One other possible use of the floodway would be to provide in it vegetative belts which during normal flow periods could act as overland "Living Filters" for surface runoff, thereby reducing pollutional impact prior to interception by the water course.

The second flood plain area is termed the restrictive zone, in which inundation might occur but where depths and velocities are generally low. Such areas can be developed provided structures are placed high enough or otherwise flood proofed so as to be reasonably free from frequent and damaging flooding.

Formulation of Flood Plain Regulations--Formulation of flood plain regulations in a simplified sense involved basically selecting the type and degree of control to be exercised for each specific flood plain. In principal the form of the regulations is not as important as a maintained adequacy of control. The degree of control normally varies with the flood hazard as measured by depth of inundation, velocity of flow, frequency of flooding, and the need for available land. Considerable planning and research encompassing varied disciplines is required for the proper formulation of flood plain regulations. Where such planning is envisioned to require a lengthy period of time during which development is likely to occur, temporary regulations should be adopted to be amended as necessary.

National Flood Insurance Program--The National Flood Insurance Act of 1968 provides previously unavailable flood insurance protection to property owners in flood-prone areas. The program operates through an insurance industry pool under the auspices of the National Flood Insurers Association, by means of a Federal subsidy. In many cases, this Federal subsidy amounts to more than ninety (90) percent of the cost of the insurance.

In order to qualify for the sale of federally subsidized flood insurance, a community must agree to adopt and enforce adequate land use and control measures consistent with Federal criteria. Basically, these criteria require that a flood-prone community must control development within the area anticipated to be inundated by the Intermediate Regional Flood.

PAST FLOODS

Summary of Historical Floods

The earliest flood on the Genesee River, which there is any knowledge, occurred in 1785. Another great flood occurring on October 23, 1835, and recorded as the greatest flood known up to that time, was eventually exceeded on March 18, 1865 when a maximum flow of 54,000 cfs was estimated as having passed through the City of Rochester. This flow rate in the lower Genesee has never been exceeded¹ and remains the greatest during the 187-year period since 1785.

Oatka Creek, upstream of the Village of Scottsville has not exhibited the frequency of flooding as occurs on the Genesee River. However, during the March, 1865 flood it was noted that all bridges on Oatka Creek from LeRoy to the Genesee River were swept away, indicating that the probability of extensive flood damage within the Oatka Creek drainage basin is quite distinct.

Lands along the lower mile of Oatka Creek are more properly within the Genesee River flood plain and as such are subject to periodic inundations. Records indicate that back water effects on Oatka Creek, induced by flood stages in the Genesee River, have extended as far as 3 miles upstream. This effect, however, has been significantly lessened by the construction of the Mount Morris Dam.

Flood Descriptions

The following descriptions, present an area flood history, and serve as illustrative examples of the type and nature of flooding occurring. It is important to bear in mind that none of the floods of record have produced flows to equal the Standard Project Flood.

MARCH 1865 — The largest known peak discharge at Rochester, estimated at 54,000 second-feet, was the result of a heavy snowfall, followed by a sudden thaw accompanied by rain. The capacity of the channel in Rochester at that time was less than

During the recent floods of June-July, 1972 the peak rate of flow in the lower Genesee was regulated by controls at Mount Morris Dam so as not to exceed 16,000 cfs, whereas flow into the Dam impoundment area approached 80,000 cfs. Had this flow been unregulated by Mt. Morris Reservoir the effects on the downstream areas would have reached catastrophic proportions.

40,000 second-feet flowed into the city, inundating most of the central portion and causing extensive damage. The flats from Rochester to Mount Morris were flooded, and the embankment of the New York Central Railroad near Avon was destroyed.

MARCH 1875 — This flood was caused by the spring break-up and rain. During the flood an ice jam formed at the Clarissa Street bridge in Rochester, and back water inundated large areas of the city, causing extensive damage.

JUNE 1889 — As a result of general rains, all streams in western New York were in flood. Bridges were washed out at Wellsville, Belmont, Mount Morris, and Dansville, and agricultural activities in the Genesee and Canaseraga valley flats were severely damaged.

MAY 1894 — Heavy precipitation terminated a long wet spell. The discharge at Mount Morris increased from 5,000 to 42,000 second-feet in less than 36 hours. The Canaseraga and Genesee flats were inundated to depths of 4 to 6 feet, and the area covered was stated by local newspapers to be 60 to 80 square miles. The valley storage reduced the discharge at Rochester to approximately 30,000 second-feet, and little damage occurred in the city.

APRIL 1896 — This flood was caused by melting snow from the hills of the watershed flowing into swollen streams. The Genesee and Canaseraga flats were inundated but the flood preceded the growing season and little damage resulted. Rochester was not affected.

MARCH 1902 — This flood was caused by a sudden thaw, during which no appreciable precipitation occurred. The Genesee flats were overflowed, and bridges in the upper basin were washed out. Part of the business section of Rochester was inundated to depths of 2 feet.

JULY 1902 — This flood was the result of a heavy rain-fall on ground saturated by prior light rains. Local interests estimated the flow at Mount Morris to have exceeded 40,000 second-feet, and the flats in the Canaseraga and Genesee valleys were inundated with large resulting damages to crops. At Rochester, the discharge did not exceed 20,000 second-feet and no damage occurred.

MARCH 1913 — Streams flowing at near-bankfull capacity, as the result of a thaw, were augmented by 5 days of heavy rainfall. During the period 23-27 March, inclusive, the total rainfall for the upper basin was 4.93 inches and for the lower, 3.94 inches. The resulting flood peaked at 37,800 second-feet at St. Helena, 19,300 second-feet at Jones Bridge, and 42,000 second-feet at Rochester. The Canaseraga flats were in flood nearly to Dansville, as were the Genesee flats, from Mount Morris to Rochester. Parts of the business section of Rochester were inundated and damages were high.

MARCH 1916 — This flood was caused by rapid melting of a heavy snow cover. The peak discharge of 48,300 second-feet at Rochester was the greatest since 1865, but, because of channel improvements through the city, little damage occurred.

MAY 1916 — This flood, the second of the year, was caused by excessive precipitation. Discharges of 44,400 and 55,100 second-feet were recorded at St. Helena and Jones Bridge, respectively, and are the greatest of record for these stations. Early crops in the flats were affected but the loss was small, and the city of Rochester sustained no damages.

DECEMBER 1927 — As the result of a long wet spell terminated by 2 days of heavy rainfall, crests of 46,800 second-feet at Jones Bridge and 29,600 second-feet at Rochester occurred on 1-2 December, respectively. The Genesee and Canaseraga flats were inundated but little damage occurred. Rochester was not affected.

JULY 1935 — This flood, resulted from an intensive 3-day rainstorm, concentrated over southcentral New York, and affected only the southeastern portion of the Genesee basin. Precipitation stations in this portion of the basin, Alfred, Andover, Angelica, and Dansville, recorded totals for the 3-day rain ranging from 5.37 to 6.35 inches. No excessive rains were recorded by stations in other sections of the Genesee basin. The peak discharges in the Genesee River were only 14,500 second-feet at Jones Bridge and 18,600 second-feet at Rochester, whereas the station near Dansville on Canaseraga Creek recorded a peak flow of 8,390 second-feet.

The principal damage areas were the agricultural lands in the Canaseraga Valley, and the Village of Wellsville on Dyke Creek. Damage in the Genesee flats was small and Rochester was not affected.

JULY 1942 — Floods, confined principally to western Pennsylvania, were caused by very

intense rainfall over a relatively short duration. Records for point rainfall for durations up to 24 hours were broken during this storm. In the Genesee Basin, damage was confined to the upper reaches in the vicinity of Wellsville. The rainfall at Alfred, Andover, and Angelica, for 17-18 July was 3.35, 4.10, and 4.05 inches, respectively. The records from automatic rainfall recorders indicate that most of the precipitation occurred during the evening of the 17th and the early morning of the 18th. Peak discharges of 9,740, 18,900, and 15,700, were recorded at Scio, St. Helena, and Jones Bridge, respectively.

MARCH-APRIL 1950 — This period covers two flood peaks a week apart. The first was caused by snowmelt accompanied by light precipitation and produced a crest of 45,400 cfs at Jones Bridge on the 29th of March. The second crest, on 5 April, was the result of moderate rainfall on wet soil and produced a crest at Jones Bridge of 25,200 cfs.

NOVEMBER 1950 — The heavy rain of November 25 caused high water in the Upper Basin, where Wellsville experienced the worst flood in the past history of the village. The south side of the village was inundated and many families were taken from their homes in boats. Several sections of highway near Wellsville and Portageville were under water. In the Lower Basin, flooding was slight, although some flatlands were flooded and sections of highway near Geneseo were covered by water.

MARCH 1956 — This flood was of the type common in the Genesee River basin, a combination of rain and snowmelt. This flood occurred after completion of Mount Morris Dam, and gives an example of the operation procedures used during a flood. Releases were reduced to about 300 cfs when the storm began, and then were increased to develop a flow of 12,000 cfs at the Jones Bridge gage, after the danger of downstream flooding had passed. Lowlying farmlands below Avon were flooded from local runoff, and there was some backwater flooding during the reservoir evacuation period. Part of this flooding was due to the fact that because of the protection provided by the dam, there has been some encroachment into the old flood plain, and also some banks have been breached by local farmers in order to drain their land. This backwater flooding prompted reconnaissance of the Lower Basin, which established 10,500 cfs as a within-channel capacity in the vicinity of Avon and set the Avon gage as the primary control point for future evacuation periods. The storm runoff resulted in a peak inflow to the reservoir of 46,000 cfs and the operation of the dam controlled the flow at Jones Bridge to not more than 12,000 cfs. The flood discharge at Rochester was held to 24,300 cfs, in contrast to an estimated natural flow of 48,300 cfs. The maximum storage in the reservoir was 183,540 acre feet, with a corresponding pool elevation of 706.9 feet.

MARCH-APRIL 1960 — This flood produced the then greatest flood volume since the

completion of Mount Morris Dam, and was caused primarily by melting of a heavy snow cover. Prior to the flood, the average water content of the snow cover was 3.3 inches in the Upper Basin and 4.1 inches in the Lower Basin. Therefore, with a sudden rise in temperature, the Lower Basin had the potential of a serious flood, even with no discharge from the reservoir. Releases from the reservoir were reduced to 300 cfs when a general thaw was forecast, and after the danger of downstream flooding was passed, flows were increased to 10,500 cfs at Avon. Lowlying farmlands again were flooded by local runoff, but no backwater flooding occurred during the evacuation period. The peak inflow to the reservoir was 35,000 cfs and the controlled peak at Jones Bridge was 10,400 cfs. The maximum storage in the reservoir was 215,845 acre-feet with a corresponding pool elevation of 719.35 feet above mean sea level.

APRIL 1961 — This flood was of moderate proportions throughout the Genesee basin, with no significant flooding except in the Canaseraga Creek watershed. It was the fourth highest flood of 50 years of record at Dansville, with a peak of 8,230 cfs, and the highest of 12 years of broken record at Shakers Crossing, near the mouth of the Canaseraga. Flooding of the rich farmland in the Canaseraga valley caused extensive damage.

JUNE 1972 — As a result of the intensive rainfalls produced by Hurricane Agnes, the Appalachian Region from West Virginia north through Southern New York suffered catastrophic flooding. In the Upper Genesee Basin, the highest flow rates for the period of record were produced. However, occurrences of serious damage were confined to areas upstream of the Mt. Morris Dam where the peak reservoir level reached 755.8 feet above mean sea level. Controlled flow regulation at the Mt. Morris Dam reduced the extent of downstream flooding to minor inundations of lowlands immediately adjacent to the River.

FUTURE FLOODS

Floods of the same or larger magnitude as those that have occurred in the past could occur in the future. Larger floods have been experienced in the past on streams with similar geographical and physiographical characteristics as those found in the study area. Similar combinations of rainfall and runoff which caused these floods could occur in the study area. Discussion of the future floods in this report is limited to those that have been designated as the Intermediate regional Flood and the Standard Project Flood. The Standard Project Flood represents a reasonable upper limit of expected flooding in the study area. The Intermediate Regional Flood may reasonably be expected to occur more frequently although it will not be as severe as the infrequent Standard Project Flood.

Intermediate Regional Flood

The Intermediate Regional Flood is based upon the statistical analysis of streamflow records of the Rochester, Avon, and Garbutt gages. From this analysis flood-frequency relationships were developed to estimate the probability of occurrence of floods of given magnitudes on Oatka Creek and the Genesee River. The Intermediate Regional Flood is by definition, a flood which is likely to be equaled or exceeded on the average of once every one hundred years. It is important to note that while on a long term basis the occurrence averages out to once per hundred years, floods of this magnitude can arise in any given year and within any given time interval. The estimated peak discharge of the Intermediate Regional Flood for the Genesee River and Oatka Creek through the study area are shown on Table 4.

TABLE 4 - PEAK FLOWS FOR INTERMEDIATE REGIONAL AND STANDARD PROJECT FLOODS

Location	River Mile	Drainage Area sq. mi.	Intermediate Regional Flood Discharge cfs	Standard Project Flood Discharge cfs
Genesee River				
Downstream of the confluence with Oatka Creek	22.19	2,191	31,000	73,600
Upstream of the confluence with Oatka Creek	22.21	1,983	27,900	66,300
Oatka Creek				
Through study area	0.0 to 11.30	208	10,000	28,000

Standard Project Flood

The concept of the Standard Project Flood was developed by the Corps of Engineers to provide a basis for comparison of floods and flood control project designs throughout the nation. The magnitude of the Standard Project Floods are based upon an appraisal of the flows expected to develop with the coincidence of the most critical climatic conditions that are considered reasonably characteristic of the study area. Hence, the standard project floods are not predicted by statistical analysis of historical streamflow data, but rather, they are "generated" by the logical transposing and combining of known flood precursor variables. Standard Project Floods have been experienced on many streams and approached on others. peak flows thus developed for the Standard Project Flood for the Genesee River and Oatka Creek through the study area are shown on Table 4.

Possible Larger Floods

Floods larger than the Standard Project Floods are possible, however, the probability of the necessary climatic conditions arising coupled with their necessary coincidence is so remote as to preclude their consideration. Although it would be catastrophic if such floods occurred in a populated and developed river valley, their size and rarity are such that protection against them by protective works can seldom, if ever, be economically provided. Similarly, and again for economic reasons, such floods have little bearing as to the delineation of flood plains or to the uses which they are put. These larger floods are used principally to determine spillway capacities on major dams where failure during such an event would result in major damage to the structure.

Hazards of Large floods

The extent of damage caused by any flood depends on the topography of the area flooded, depth and duration of flooding, velocity of flow, rate of rise, and developments in the flood plain. Deep flood water flowing at high velocity and carrying floating debris would create conditions hazardous to persons and vehicles attempting to cross flooded areas. In general, flood water 3 or more feet deep and flowing at a velocity of 3 or more feet per second could easily sweep an adult person off his feet, thus creating definite danger of injury or drowning. Rapidly rising and swiftly flowing flood water may trap persons in homes that are ultimately destroyed, or in vehicles that are ultimately submerged or floated. Water lines can be ruptured by deposits of debris and the force of flood waters, thus creating the possibility of contaminated domestic water supplies. Damaged sanitary sewer lines and sewage treatment plants could result in the pollution of flood waters creating health hazards. Isolation of areas by flood water could create hazards in terms of medical, fire, or law enforcement emergencies.

Flooded areas and flood damages -- The areas that would be flooded by the Intermediate Regional and Standard Project Floods are shown in detail on Plates 4 through 6. The actual limits of these overflow areas may vary somewhat from those shown on the maps because the 10-foot contour interval and scale of the maps do not permit precise plotting of the flooded area boundaries. Plates 7 and 8 show water surface profiles of the Intermediate Regional and Standard Project Floods. Depth of flow in the channel can be estimated from these illustrations. Typical cross sections of the flood plain at selected locations, together with the water surface elevation and lateral extent of the Intermediate Regional and Standard Project Floods are shown on Plates 9 through 11.

For insurance and assessment purposes flood damages can be generalized into the following three classifications:

- a. Direct damages, consisting of physical damages to property and goods, as can be measured by the cost of repair or replacement.
- b. Indirect damages, consisting of the value of services lost by reasons of flood conditions, including losses of business and wages and costs of relief, both within and without the flood area, during the period of flooding and subsequent rehabilitation.
- c. Depreciation damages, consisting of loss in value or destruction of usefulness, such as ruination of once fertile lands for future agricultural purposes.

Obstructions -- During floods, debris collecting on bridges could decrease their carrying capacity and cause greater water depths (backwater effect) upstream of these structures. Since the occurrence and amount of debris are indeterminate factors, only the physical characteristics of the structures were considered in preparing profiles of the Intermediate Regional and Standard Project Floods. Similarly, the maps of flooded areas show the backwater effect of obstructive bridges, but do not reflect increased water surface elevation that could be caused by debris collecting against the structures, or by deposition of silt in the stream channel under structures. Of the 11 bridges crossing the Genesee River and Oatka Creek, most of them are obstructive to the Intermediate Regional Flood and even more are obstructive to the Standard Project Flood. In some cases bridges may be high enough so as not to be inundated by floodflows; however, the approaches to these bridges may be at lower elevations and subject to flooding and rendered impassable. Table 5 lists water surface elevations at bridges during floodflows.

TABLE 5 ELEVATION DATA* Bridges Across Genesee River and Oatka Creek

Identification	Mileage Above Mouth	Underclearance Elevation (a)	Water Surface Elevation		
			Intermediate Regional Flood	Standard Project Flood	
Genesee River					
Scottsville-Henrietta Rd.	21.70	532.7	529.9	540.7	
Rush Rd. (N.Y.S. 251)	23.90	533.5	533.0	543.1	
Oatka Creek					
Penn-Central R. R.	1.30	533.2	534.8	542.2	
Canawaugus Road	1.35	542.1	537.0	543.0	
Bowerman Road	2.60	550.5	549.5	554.4	
Union Street (U.S.G.S. Garbutt Gage)	4.08	577.0	573.5	581.5	
Private Bridge	4.70	582.0	580.1	586.2	
Baltimore & Ohio R. R.	5.45	591.0	588.2	596.5	
Wheatland Center Road	5.75	591.1	591.2	599.7	
State Street (Twin Bridges)	7.62	602.1	604.4	609.6	
Main Street (N.Y.S. Rt. 36)	8.13	607.5	606.6	612.0	

(a) U.S.C. & G.S. DATUM

*Water surface elevation taken at upstream side of bridge

Velocities of flow -- Water velocities during floods depend largely on the size and shape of the cross sections, conditions of the stream, and the bed slope, all of which vary on different streams and at different locations on the same stream. During an Intermediate Regional Flood, velocities of main channel flow in Oatka Creek in the study area would be 5 to 13 feet per second. Water flowing at this rate is capable of causing severe erosion to streambanks and fill around bridge abutments and transporting large objects. In the Genesee River the velocities would be somewhat lower ranging from 5 to 7 feet per second. It is expected that velocity of flow during a Standard Project Flood would be slightly higher than during an Intermediate Regional Flood. Overbank flow in the study area would average 1 to 5 feet per second. Water flowing at 2 feet per second or less would deposit debris and silt.

Rates of rise and duration of flooding -- Rates of rise are dependent upon the shape of the basin, antecedent conditions, intensity of the storm, development within the basin and debris in the channel at the time of the storm.

The duration of a flood is dependent upon the duration of the storm, the storage capacity of the overbank, prolonged runoff from snowmelt, and high stages caused by ice jams, etc.

An Intermediate Regional Flood has not occurred in Oatka Creek during the period of record at the gage. It is impossible to predict accurate rates of rise and duration because many variations in rainfall distribution could produce the Intermediate Regional Flooding peak discharge with a variety of rates of rise.

A study of the nature of flooding within the study area indicates that the Genesee River and Oatka Creek through the study area are not prone to rapid and dangerous rates of rise. The estimated rates of rise for flood conditions are estimated to be between 0.5 to 1.0 feet per hour, with flood conditions lasting from three to four days.

Photographs, future flood heights -- The levels that the Intermediate Regional and Standard Project Floods are expected to reach at various locations in the Town of Wheatland are indicated on the following photographs.



Figure 13 - Future flood heights at Scott Crescent in Scottsville.
Photo taken February 1973.

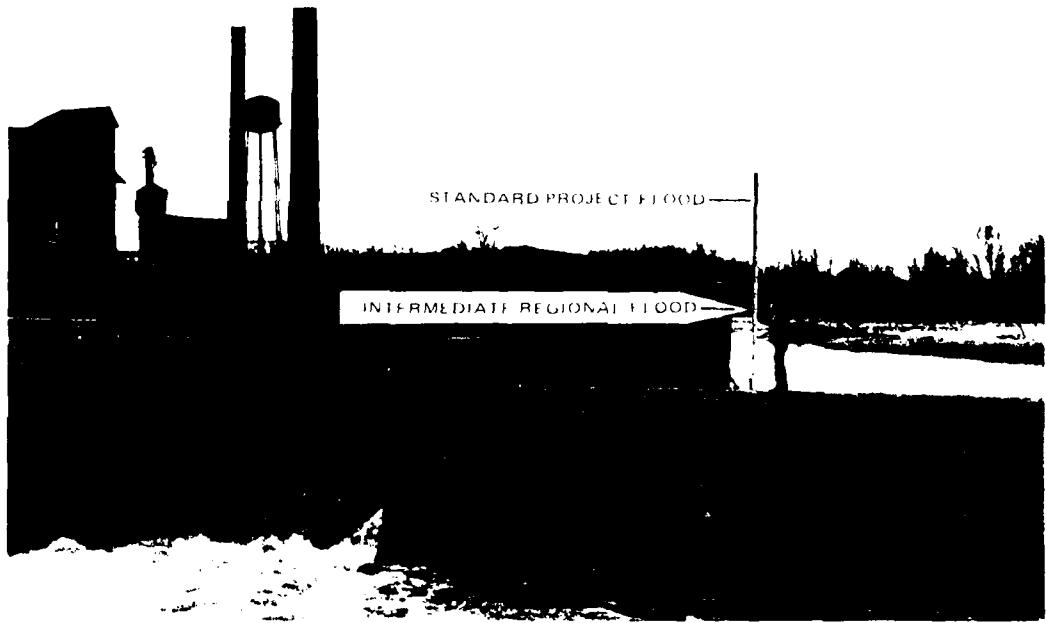


Figure 14 - Future flood heights at Wheatland Center Road dam
near General Aniline & Film Corporation facility. Photo taken
January 1973.



Figure 15 - Future flood heights at State Street bridge near Mumford.
Photo taken January 1973.

GLOSSARY

Backwater. The resulting high water surface in a given stream due to a downstream obstruction or high stages in an intersecting stream.

Flood. An overflow of lands not normally covered by water and that are used or usable by man. Floods have two essential characteristics: The inundation of land is temporary; and the land is adjacent to and inundated by overflow from a river, stream, ocean, lake, or other body of standing water.

Normally a "flood" is considered as any temporary rise in streamflow or stage, but not the ponding of surface water, that results in significant adverse effects in the vicinity. Adverse effects may include damages from overflow of land areas, temporary backwater effects in sewers and local drainage channels, creation of unsanitary conditions or other unfavorable situations by deposition of materials in stream channels during flood recessions, rise of ground water coincident with increased streamflow, and other problems.

Flood Crest. The maximum stage or elevation reached by the waters of a flood at a given location.

Flood Plain. The areas adjoining a river, stream, watercourse, ocean, lake, or other body of standing water that have been or may be covered by floodwater.

Flood Profile. A graph showing the relationship of water surface elevation to location, the latter generally expressed as distance above mouth for a stream of water flowing in an open channel. It is generally drawn to show surface elevation for the crest of a specific flood but may be prepared for conditions at a given time or stage.

Flood Stage. The stage or elevation at which overflow of the natural banks of a stream or body of water begins in the reach or area in which the elevation is measured

Hurricane. An intense cyclonic windstorm of tropical origin in which winds tend to spiral inward in a counterclockwise direction toward a core of low pressure, with maximum surface wind velocities that equal or exceed 75 miles per hour (65 knots) for several minutes or longer at some points. Tropical storm is the term applied if maximum winds are less than 75 miles per hour.

Hydrograph. A graph showing flow values against time at a given point, usually measured in cubic feet per second. The area under the curve indicates total volume of flow.

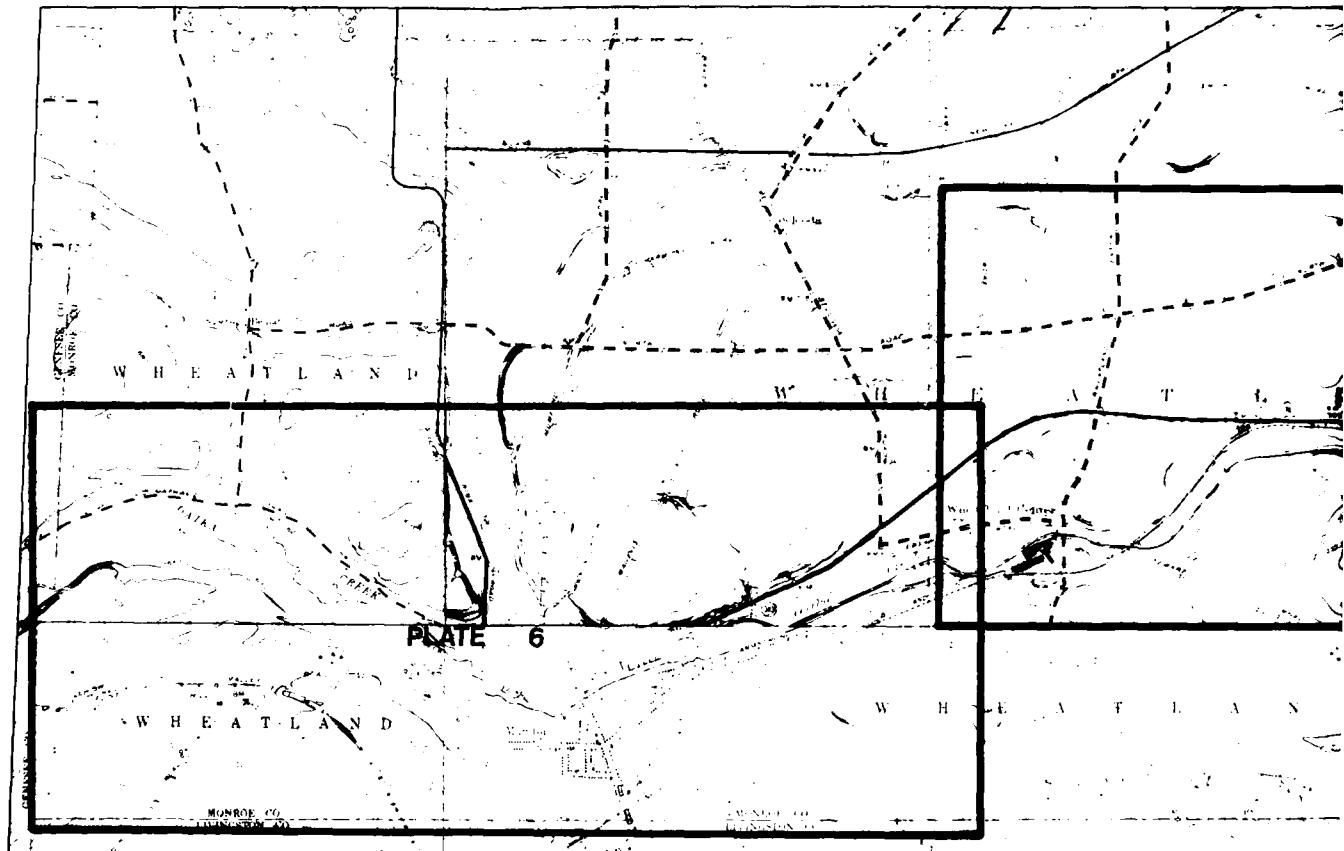
Intermediate Regional Flood. A flood having an average frequency of occurrence in the order of once in 100 years although the flood may occur in any year. It is based on statistical analysis of streamflow records available for the watershed and analysis of rainfall and runoff characteristics in the general region of the watershed.

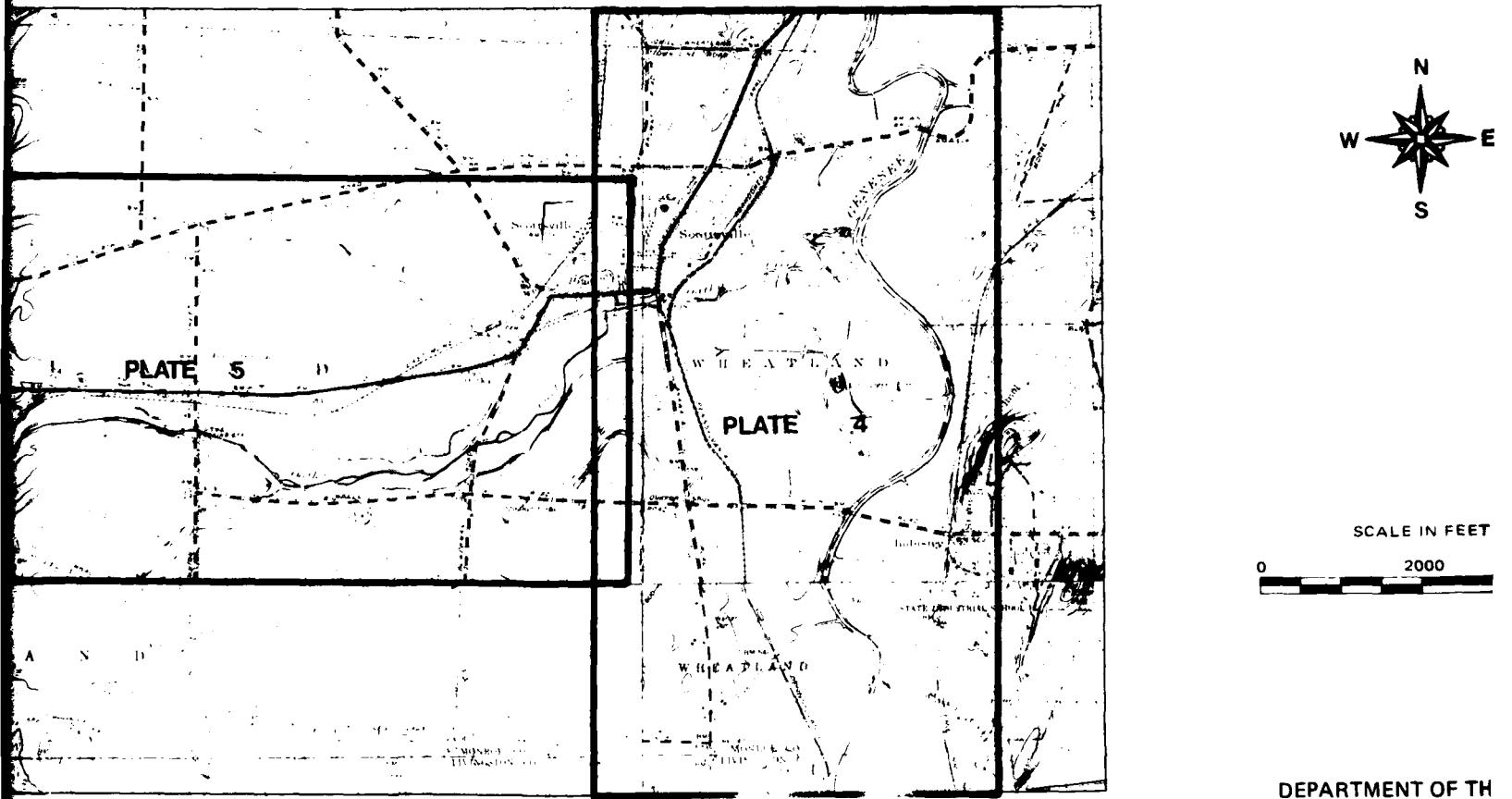
Left Bank. The bank on the left side of a river, stream, or watercourse, looking downstream.

Right Bank. The bank on the right side of a river, stream, or watercourse, looking downstream.

Standard Project Flood. The flood that may be expected from the most severe combination of meteorological and hydrological conditions that are considered reasonably characteristic of the geographical area in which the drainage basin is located, excluding extremely rare combinations. Peak discharges for these floods are generally about 40-60 percent of the Probable Maximum Floods for the same basins. As used by the Corps of Engineers, Standard Project Floods are intended as practicable expressions of the degree of protection that should be sought in the design of flood control works, the failure of which might be disastrous.

Underclearance Elevation. The elevation at the top of the opening of a culvert, or other structure through which water may flow along a watercourse.





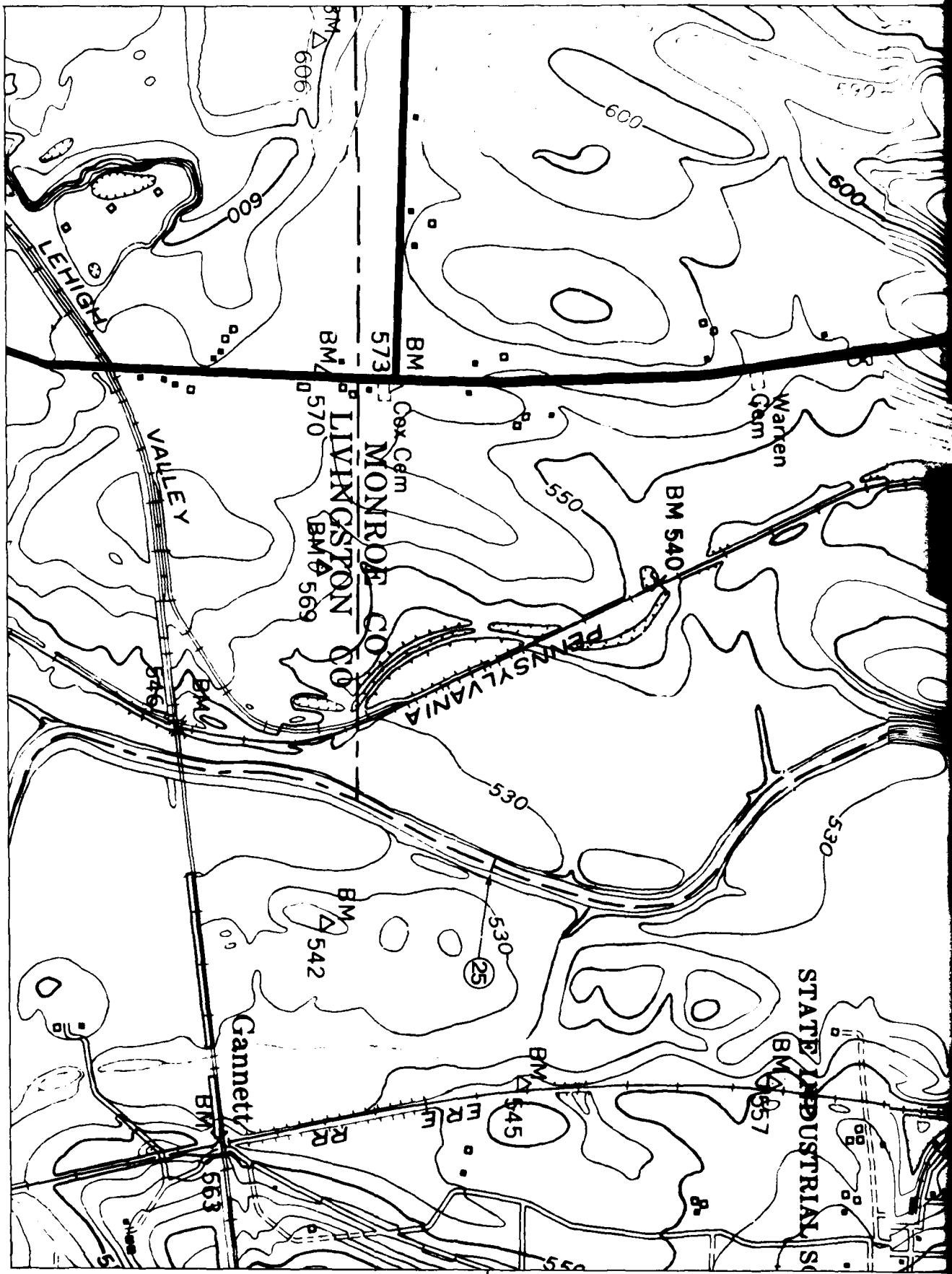
DEPARTMENT OF THE
BUFFALO DISTRICT, CORPS
BUFFALO, NEW YORK
FLOOD PLAIN INFO
OATKA CREEK AND GENESEE RIVER
TOWN OF WHEATLAND
INDEX MAP - FLOOD PLAIN
APRIL 1973

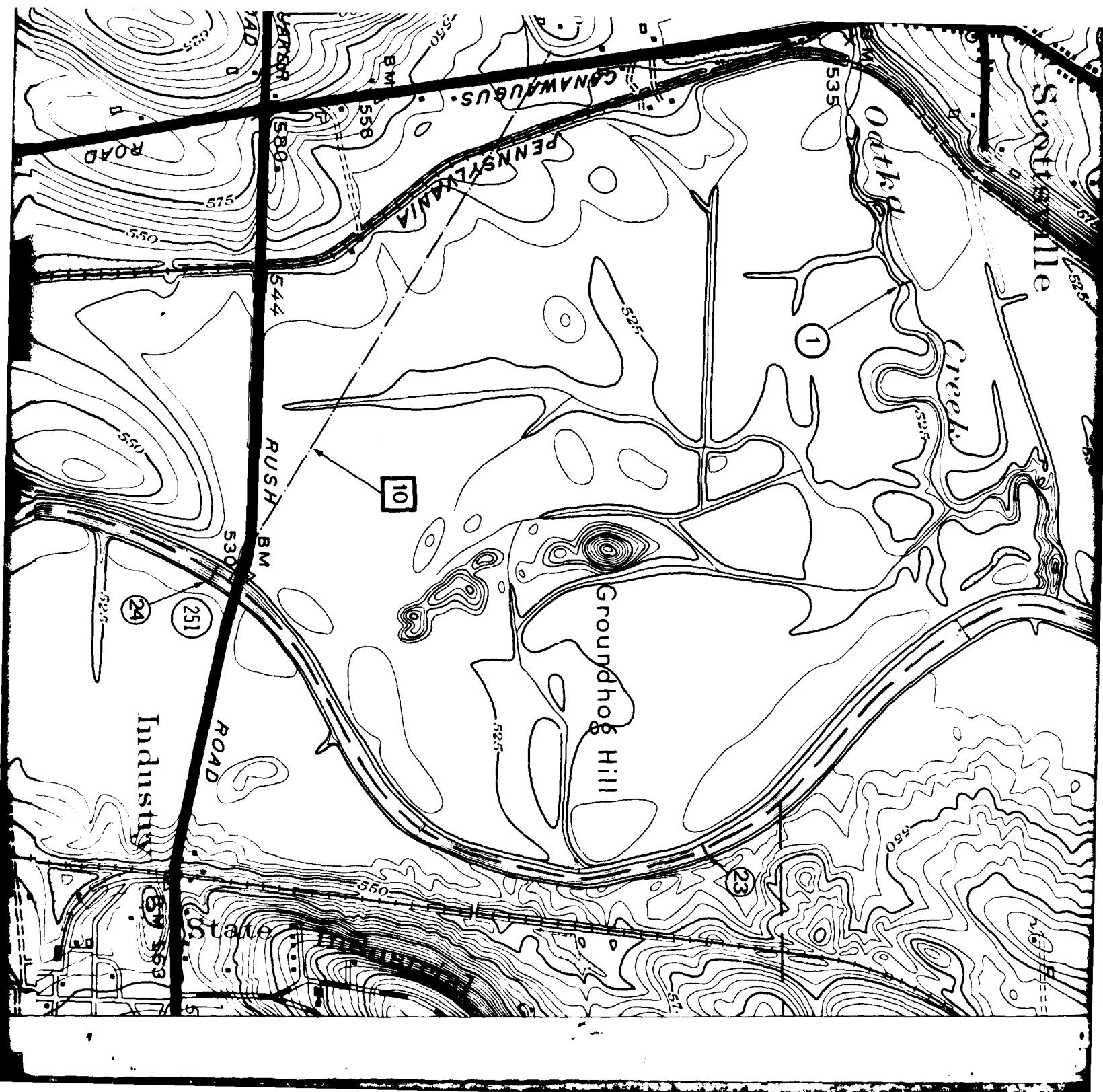


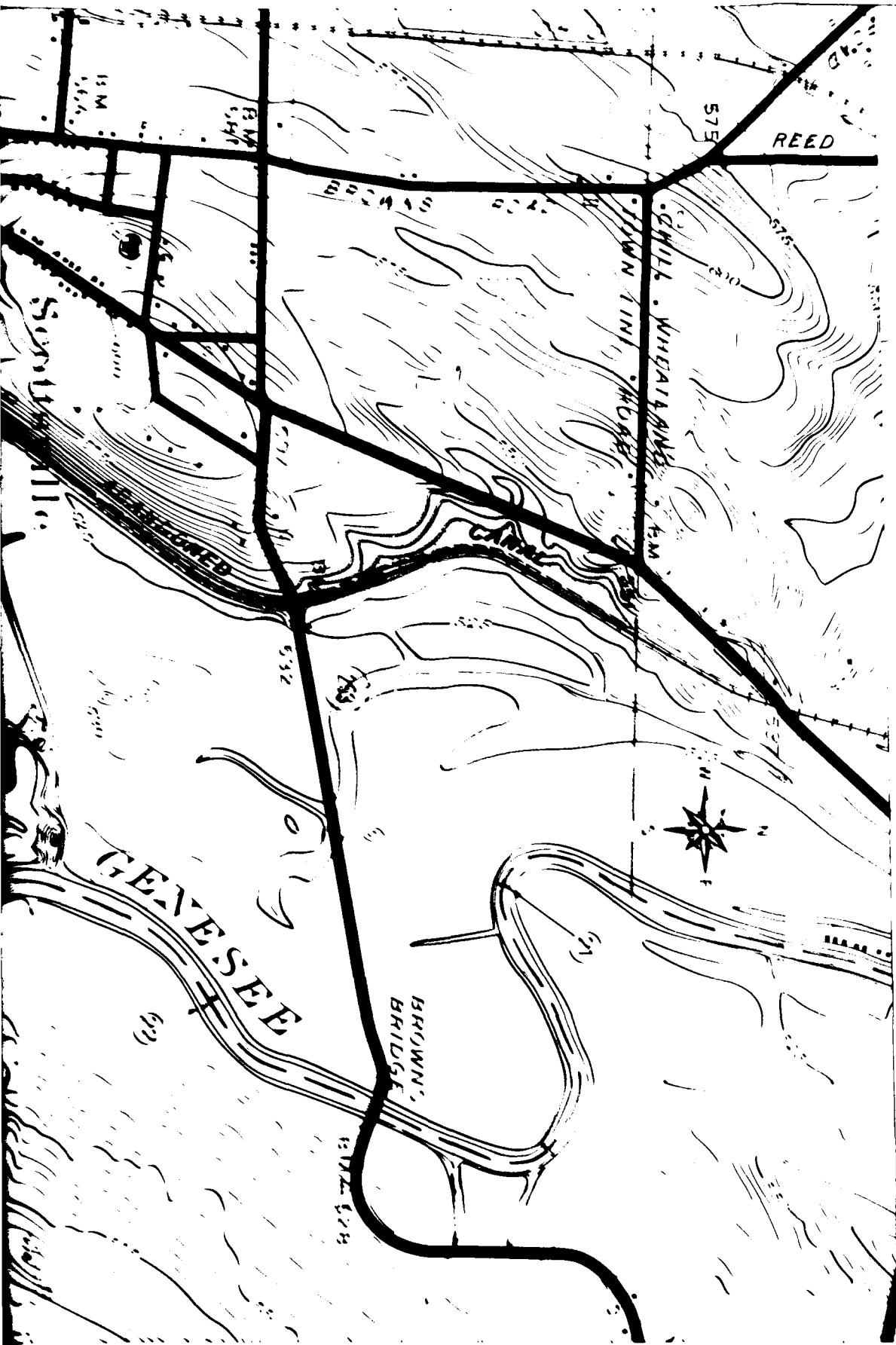
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DEPARTMENT OF THE
BUFFALO DISTRICT, CORPS OF ENGINEERS
BUFFALO, NEW YORK
FLOOD PLAIN INFORMATION
OATKA CREEK AND GENESSEE RIVER
TOWN OF WHEATLAND
FLOODED AREA
APRIL 1973

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FROM MOUTH

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Photo enlargement of
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tions on ground as
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Roadway may be sub-
seal runoff.

Interval is 5 feet.

E IN FEET

1000 2000

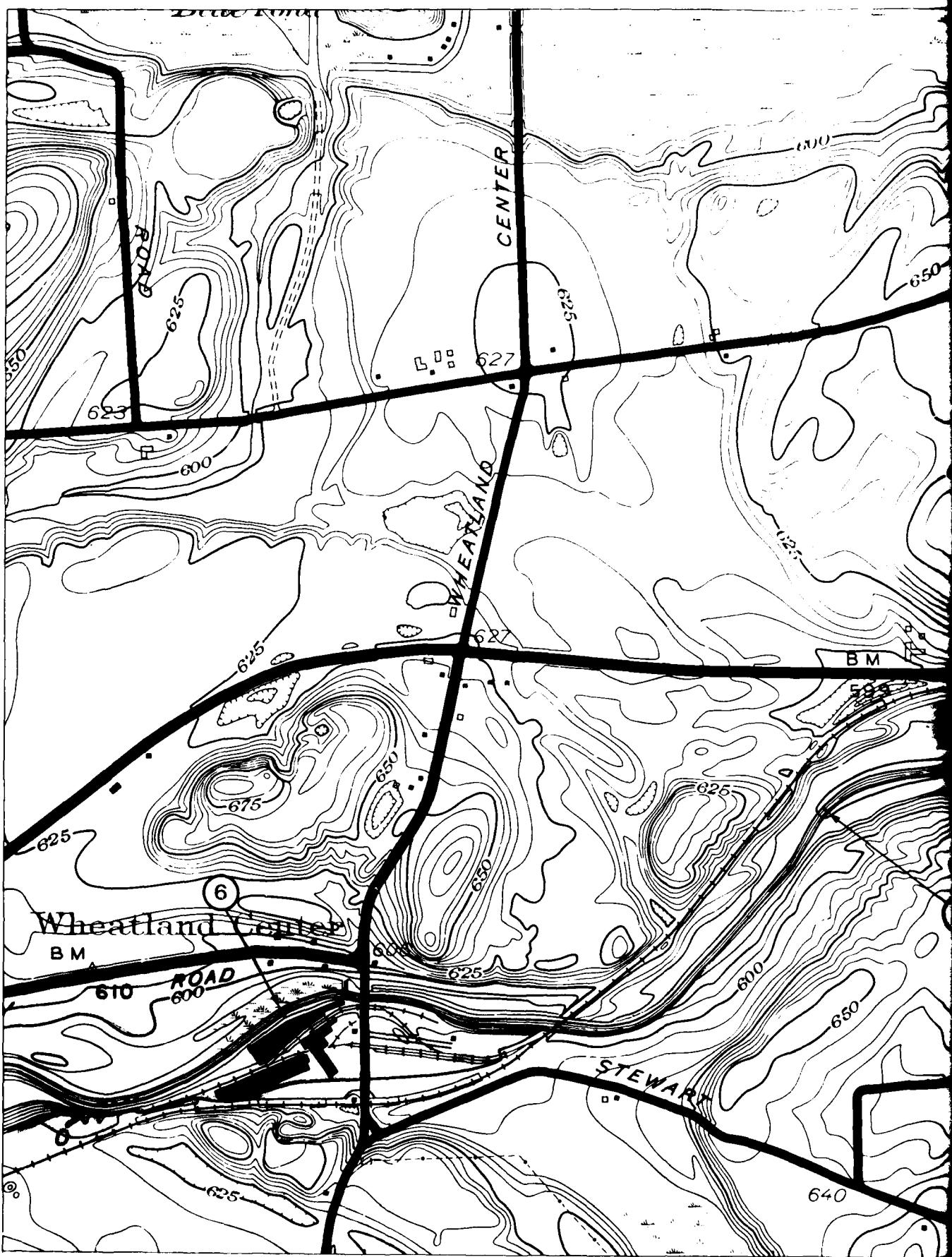
U.S. ARMY
CORPS OF ENGINEERS
NEW YORK
INFORMATION

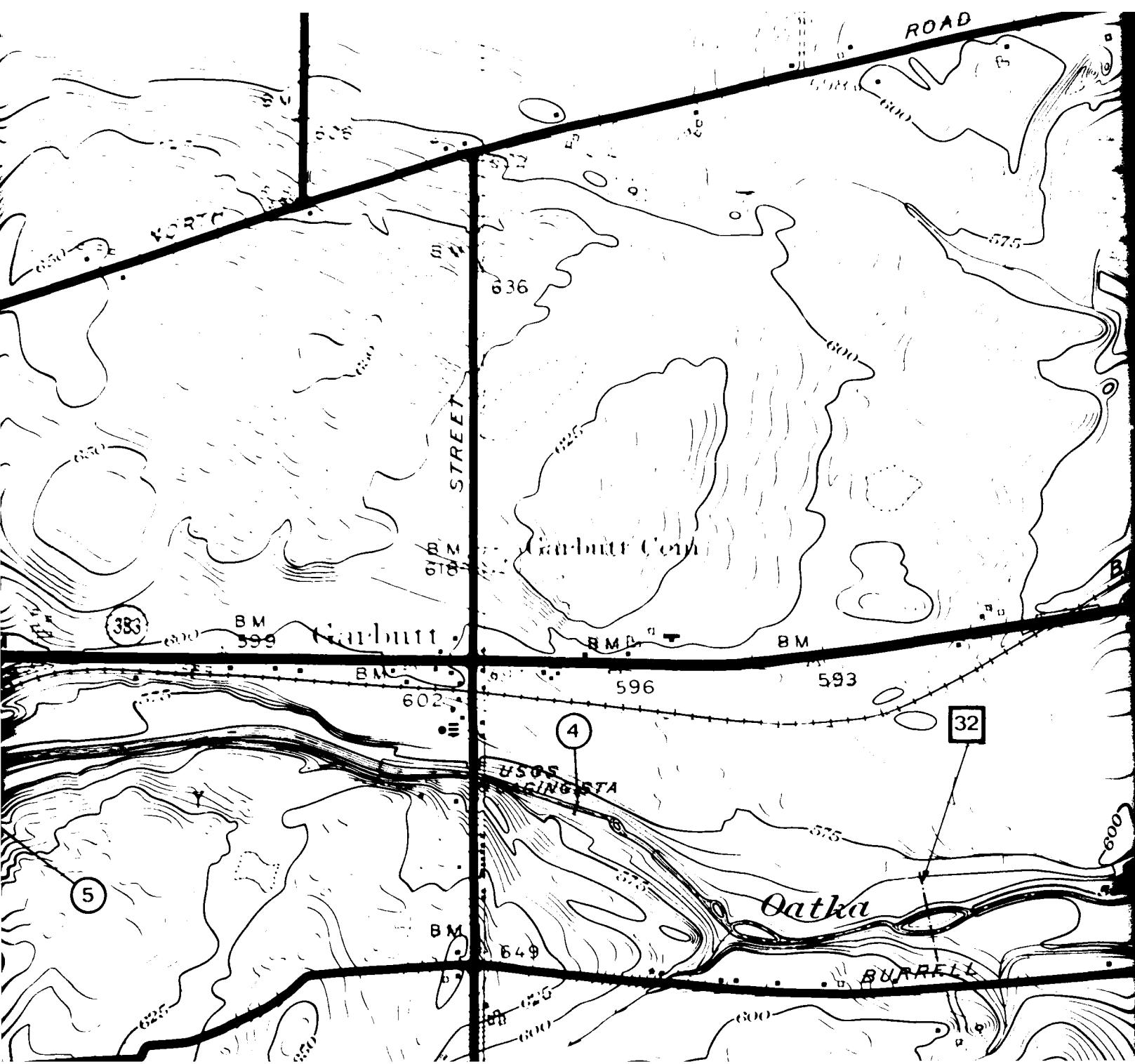
ND GENESEE RIVER
WHEATLAND

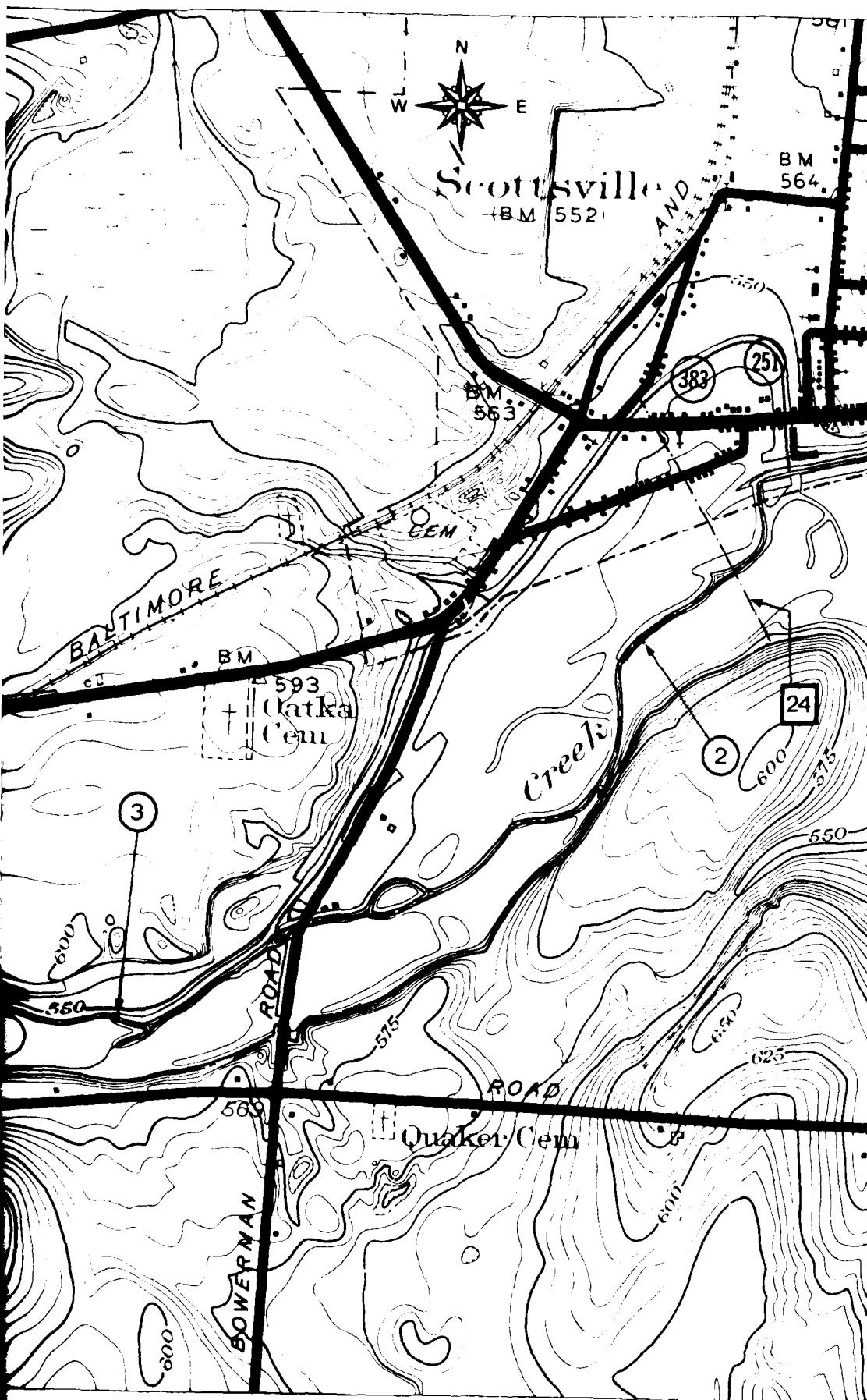
ED AREAS

1973

PLATE 4







LEGEND

INTERMEDIATE REGIONAL FLOOD

STANDARD PROJECT FLOOD

MILE POINT UP STREAM FROM MOUTH

VALLEY CROSS SECTION

NOTES:

- Map is a composit photo enlargement, New York U.S.G.S. 7.5 min. Quadrangle Sheets; Caledonia and Clifton. Minor additions and adjustments made by Corps of Engineers.
- Limits of overflow indicated may vary some from actual locations on ground as explained in this report.
- Areas outside the floodway may be subject to flooding from local runoff.
- Minimum contour interval is 5 feet.

SCALE IN FEET



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BUFFALO, NEW YORK
FLOOD PLAIN INFORMATION

**OATKA CREEK AND GENESEE
TOWN OF WHEATLAND
FLOODED AREAS**
APRIL 1973

NAL FLOOD

LOOD

FROM MOUTH

(3)

32

photo enlargement of
7.5 min. Quadrangle
Clifton. Minor addi-
made by Corps of

indicated may vary
tions on ground as
pt.

oodway may be sub-
local runoff.

Interval is 5 feet.

IN FEET

2000

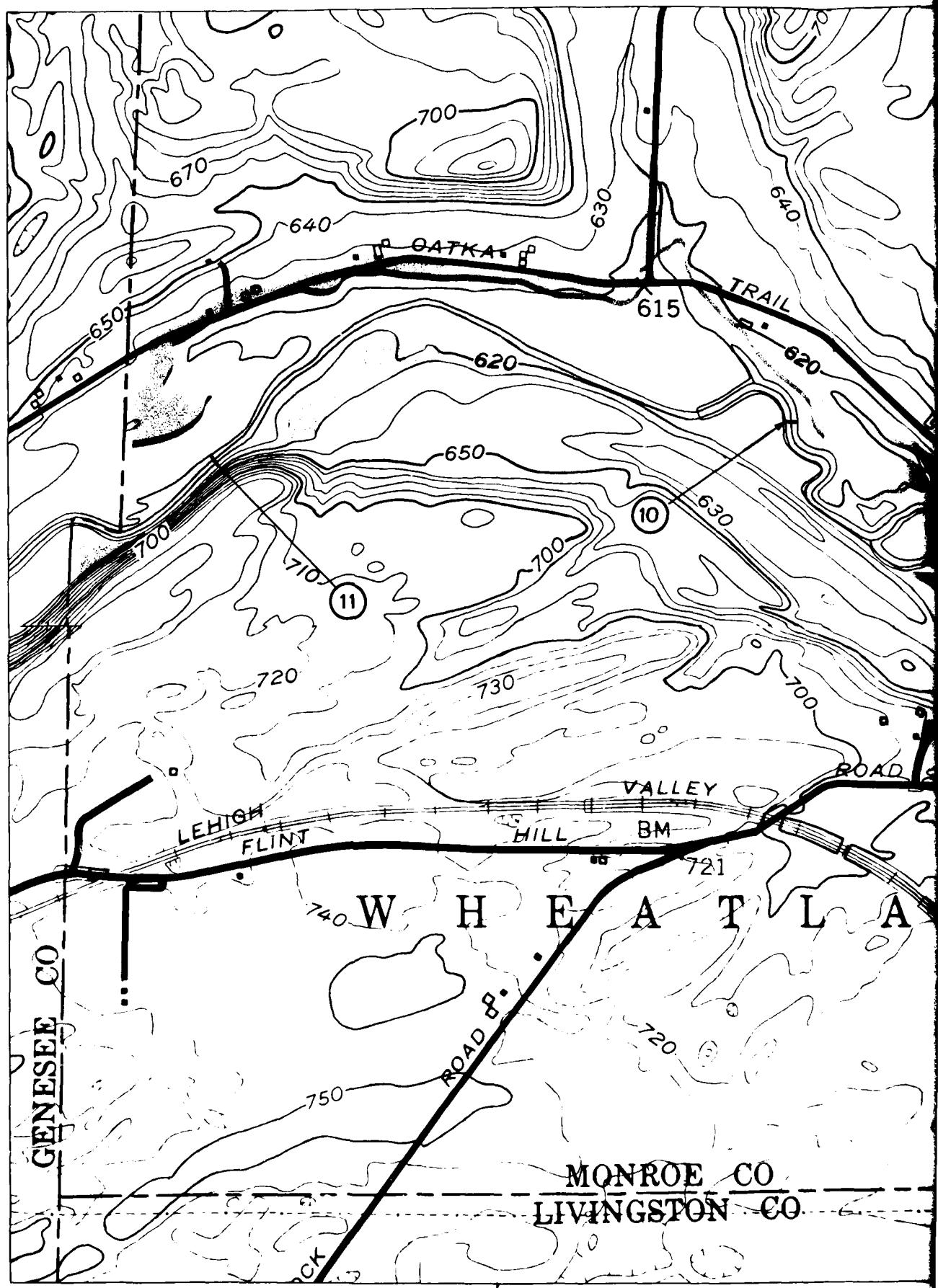
F THE ARMY
ORPS OF ENGINEERS
EW YORK
FORMATION

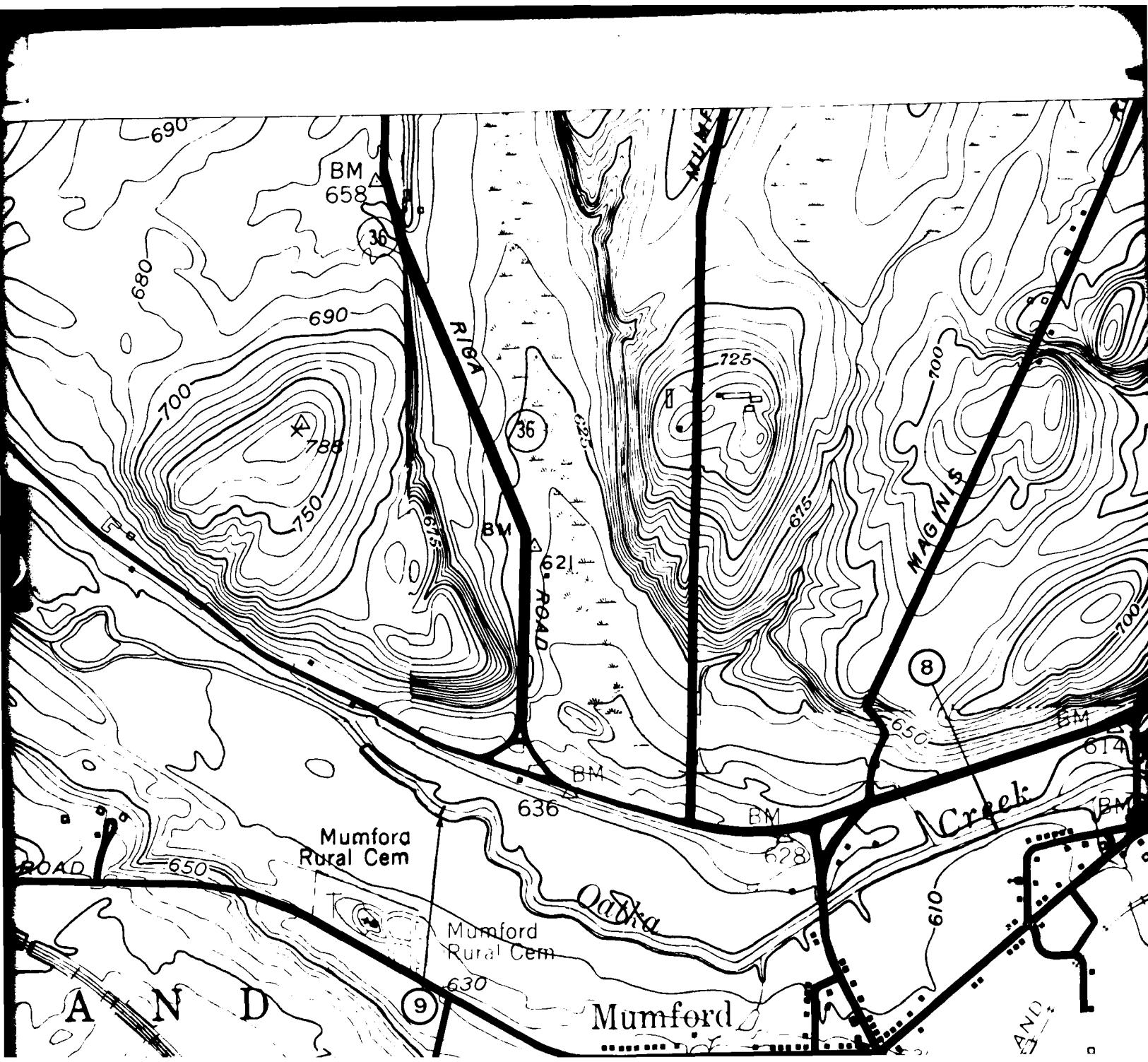
GENESEE RIVER
EATLAND

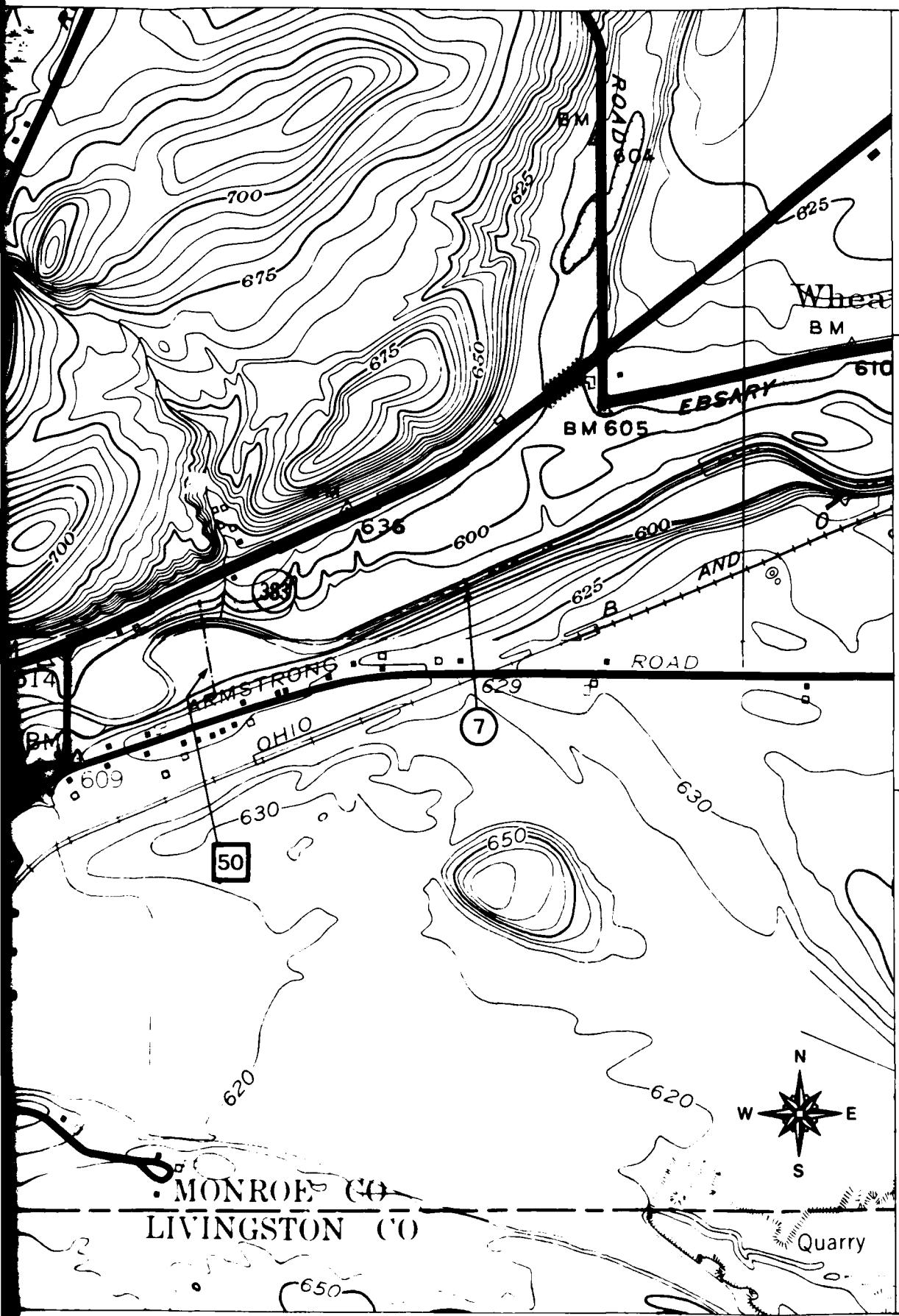
AREAS

973

PLATE 5







DNAL FLOOD

FLOOD

M FROM MOUTH

(8)

ON

50

A photo enlargement of
7.5 min. quadrangle
onia, Churchville
ditions and adjust-
s. of Engineers.

indicated may vary
ation on ground as
ort.

floodway may be sub-
local runoff.

interval is 5 feet.

LE IN FEET

1000 2000

U.S. ARMY
CORPS OF ENGINEERS
NEW YORK
INFORMATION

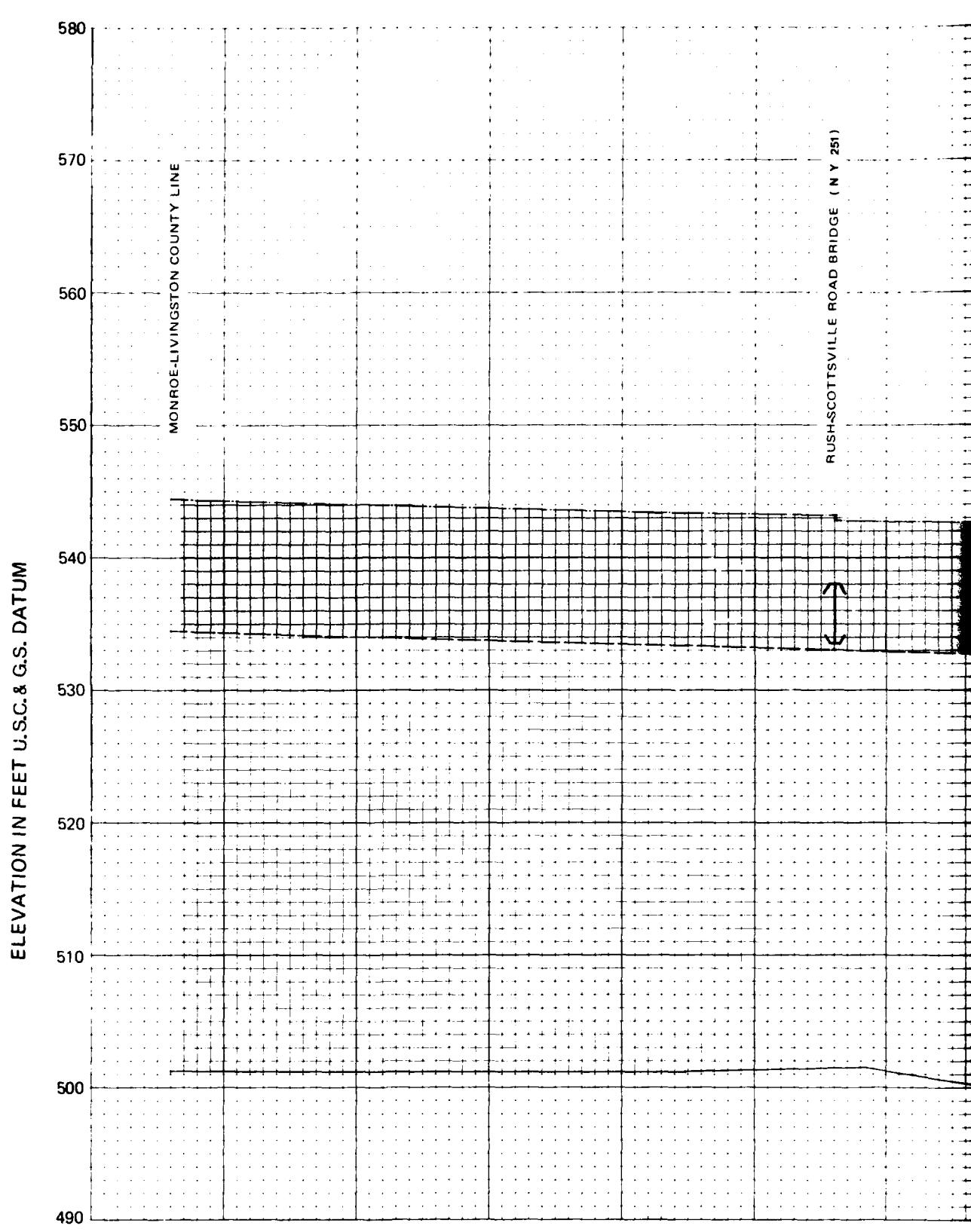
ND GENESEE RIVER

WHEATLAND

ED AREAS

1973

PLATE 6



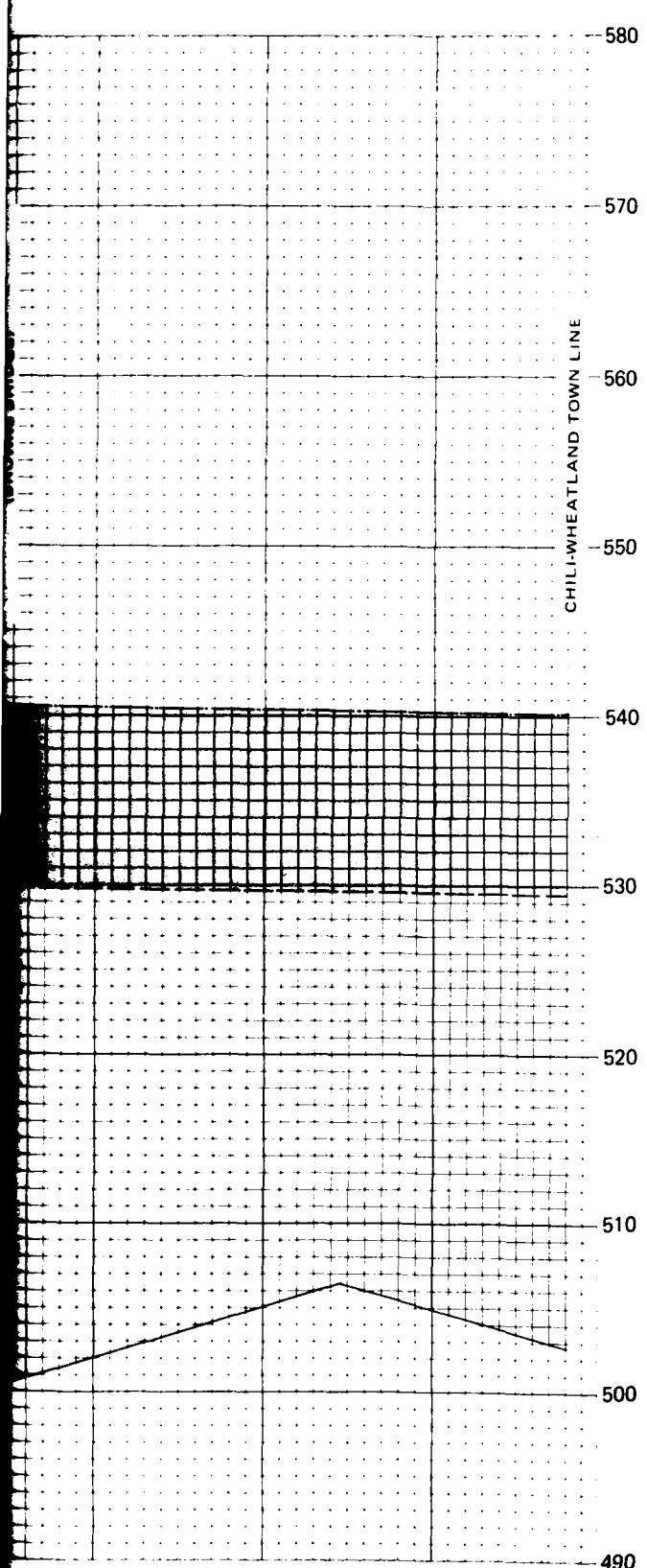
SCOTTSVILLE - HENRIETTA ROAD BRIDGE
(BROWNS BRIDGE)

CONFLUENCE OATKA CREEK

22

23

MILES UPSTREAM OF MOUTH
GENESEE RIVER



LEGEND

STANDARD PROJECT FLOOD

INTERMEDIATE REGIONAL FLOOD

APPROXIMATE STREAM BED

APPROXIMATE FLOOR ELEVATION

APPROXIMATE LOW STEEL ELEVATION

NOTES:

1. Crest profiles are based on the following:
Existing channel conditions
Existing Structures
Existing conditions of Development
2. Large scale filling will raise profile unless sufficient floodway is provided.

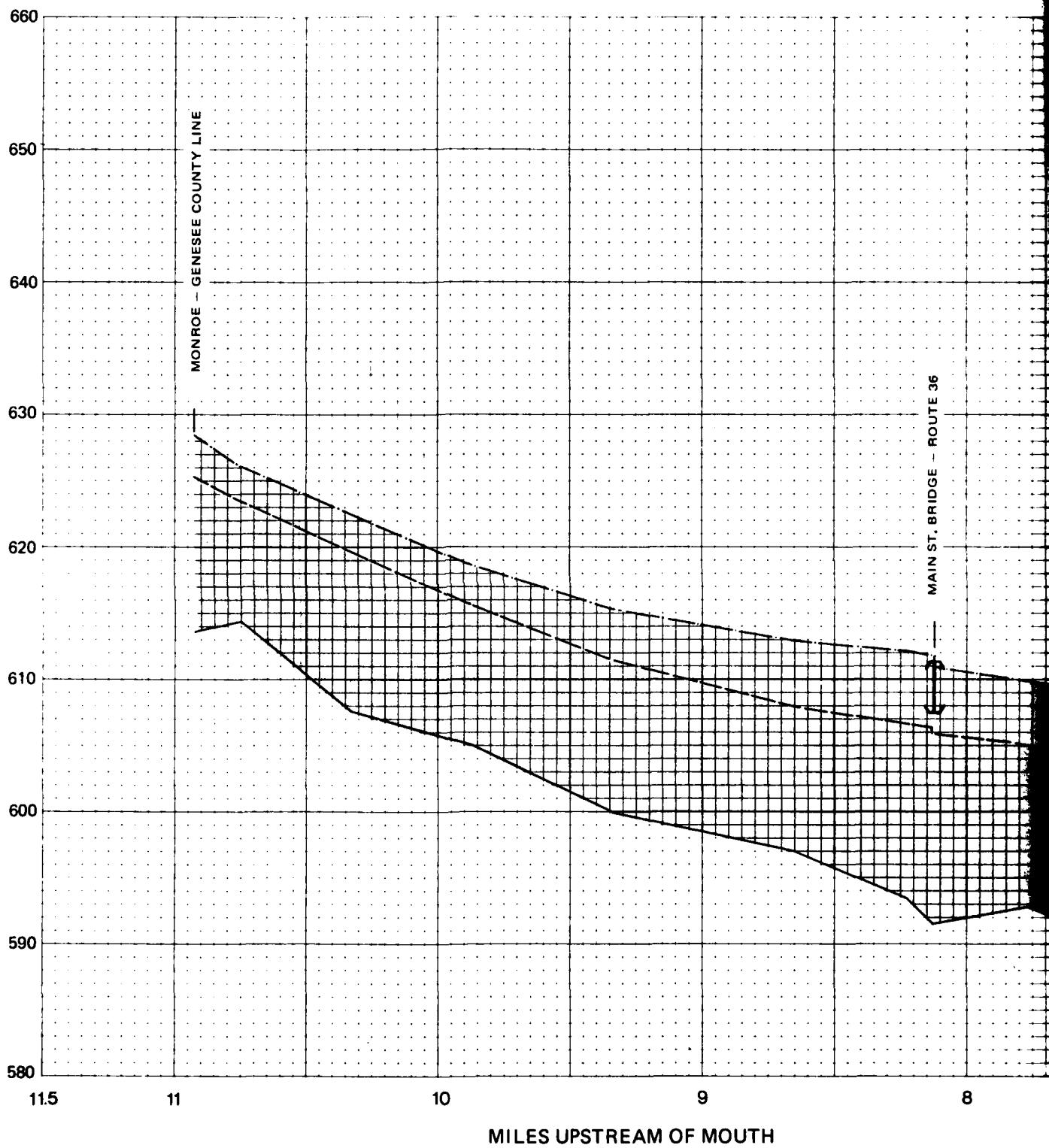
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FLOOD PLAIN INFORMATION
OATKA CREEK AND GENESEE RIVER

TOWN OF WHEATLAND

PROFILES

APRIL 1973

ELEVATION IN FEET U.S.C. & G.S. DATUM



STATE ST. BRIDGE - MUMFORD TWIN CHANNELS

660
650
640
630
620
610
600
590
580

ELEVATION IN FEET U.S.C. & G.S. DATUM

7

630
620
610
600
590
580
570
560
550

WHEATLAND CENTER ROAD DAM
WHEATLAND CENTER ROAD BRIDGE

BALTIMORE AND OHIO R. R. BRIDGE

PRIVATE ACCESS BRIDGE

UNION ST. BRIDGE - GARBUU

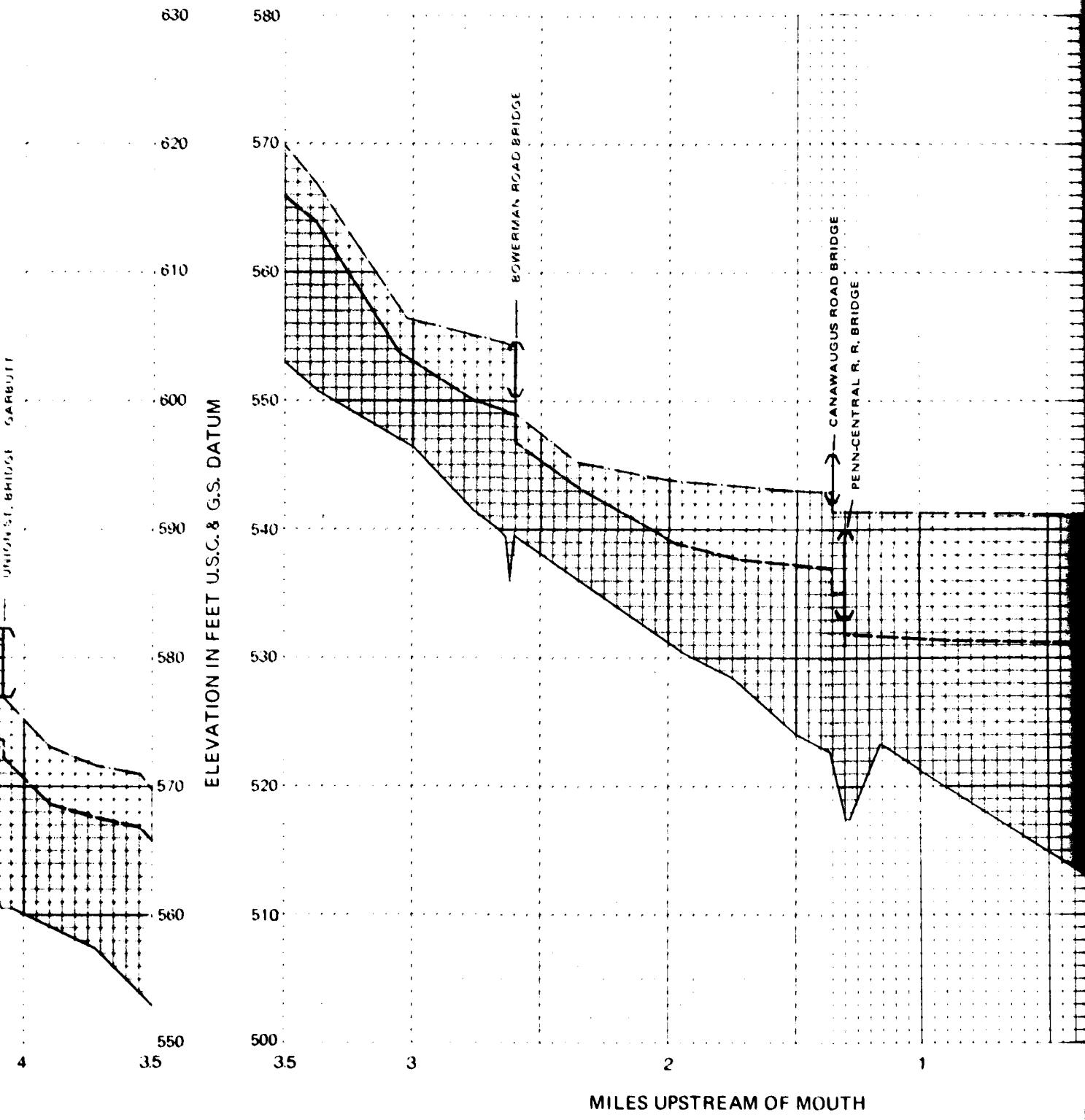
7

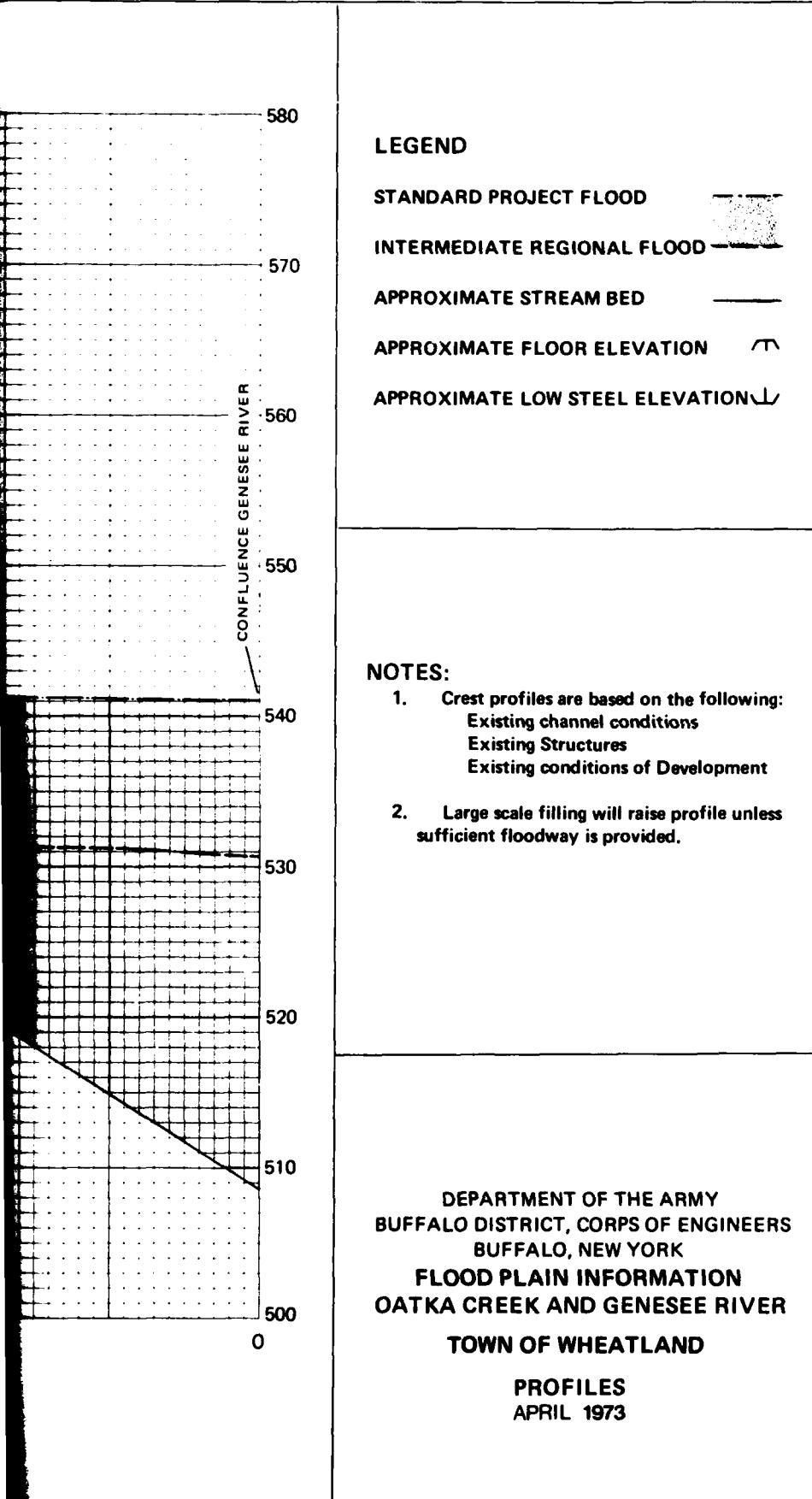
6

MILES UPSTREAM OF MOUTH

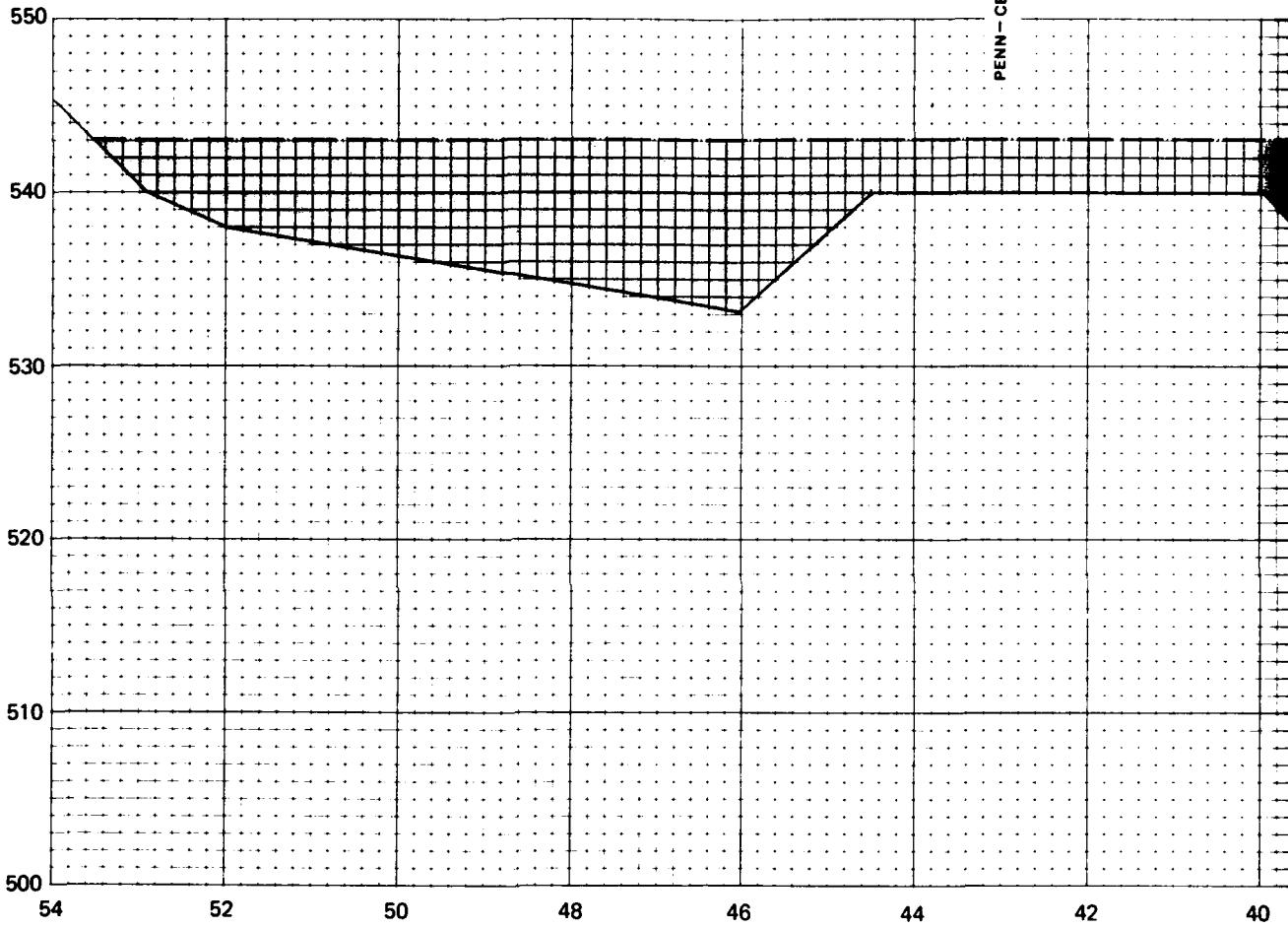
OATKA CREEK
FLOOD PROFILE

4

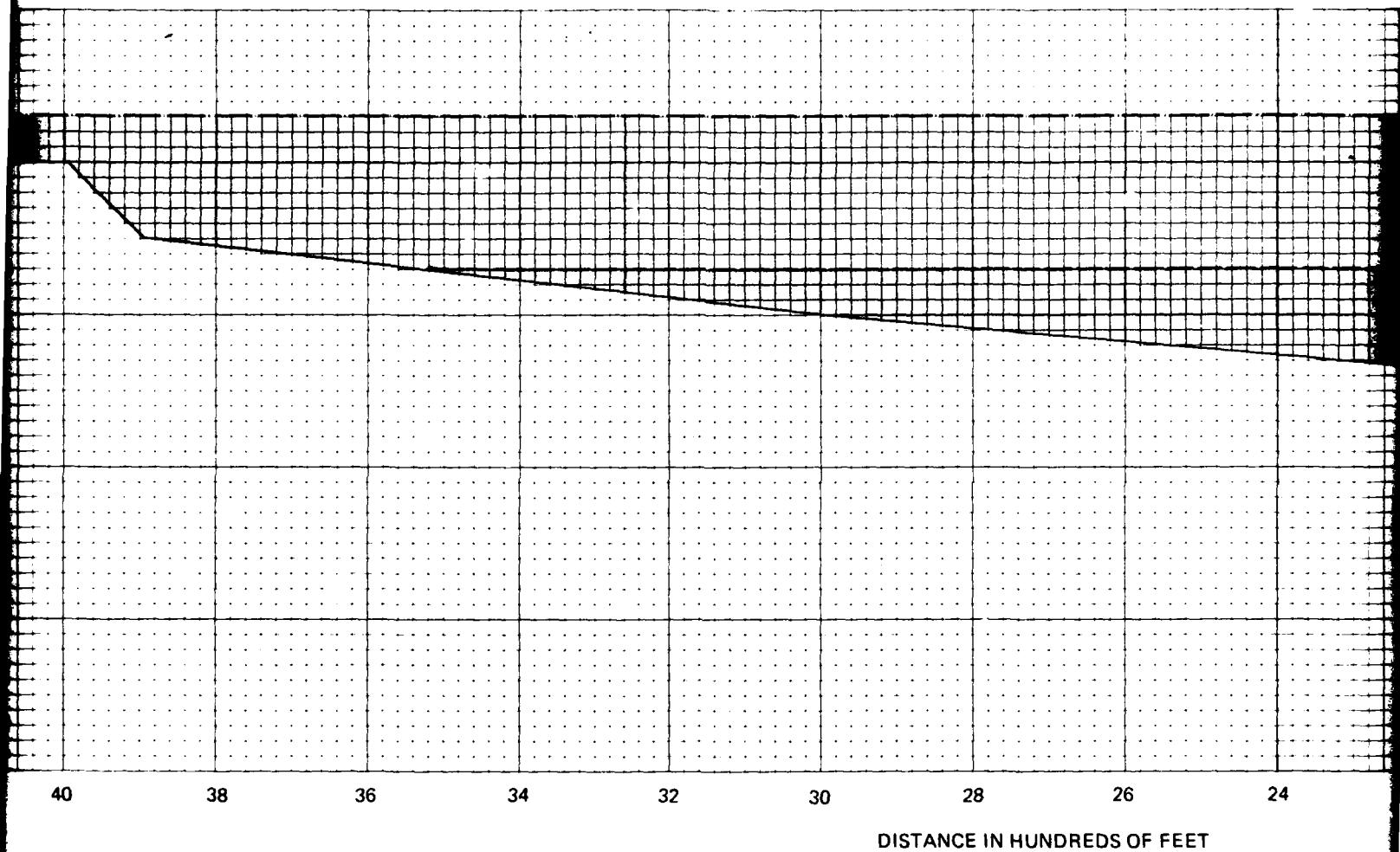




ELEVATION IN FEET U.S.C. & G.S. DATUM



PENN-CENTRAL RAILROAD

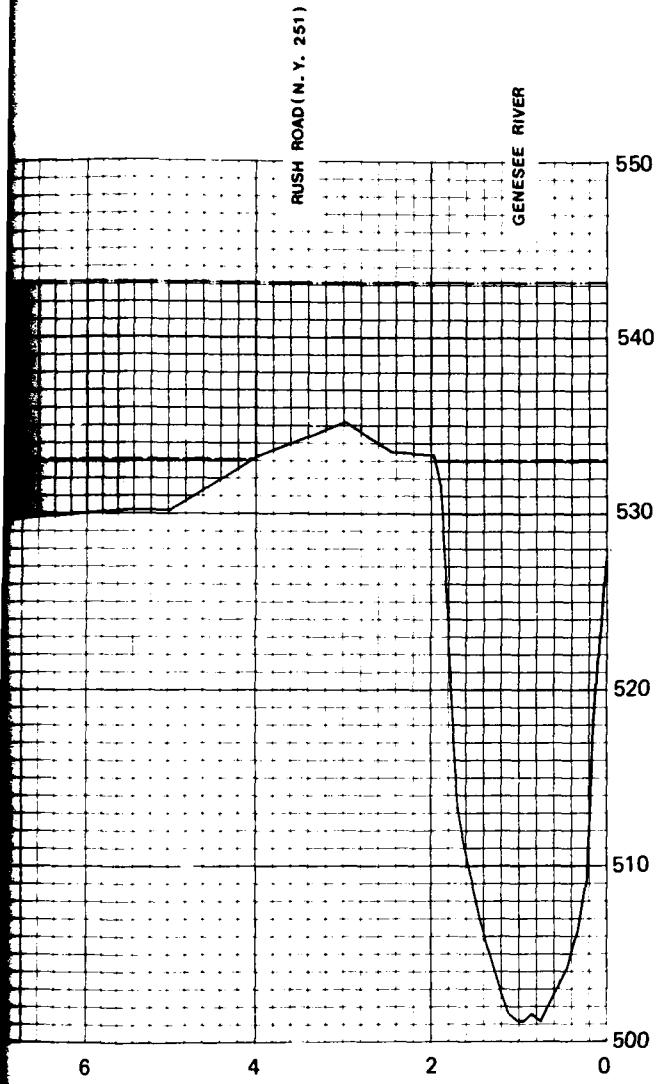


DISTANCE IN HUNDREDS OF FEET

CROSS SECTION NO. 10
MILE POINT 23.9

A graph plotted on a grid background. The vertical axis has 10 horizontal grid lines, and the horizontal axis has 10 vertical grid lines. A series of points is connected by straight line segments, forming a curve that slopes downward from left to right. There is a prominent V-shaped dip in the curve at the point where the horizontal axis value is 18. The curve starts at approximately (22, 10), dips to a minimum of about (18, 4), and then rises to end at approximately (6, 8). The grid lines are spaced evenly across the page.

22 20 18 16 14 12 10 8 6



LEGEND

STANDARD REGIONAL FLOOD ———

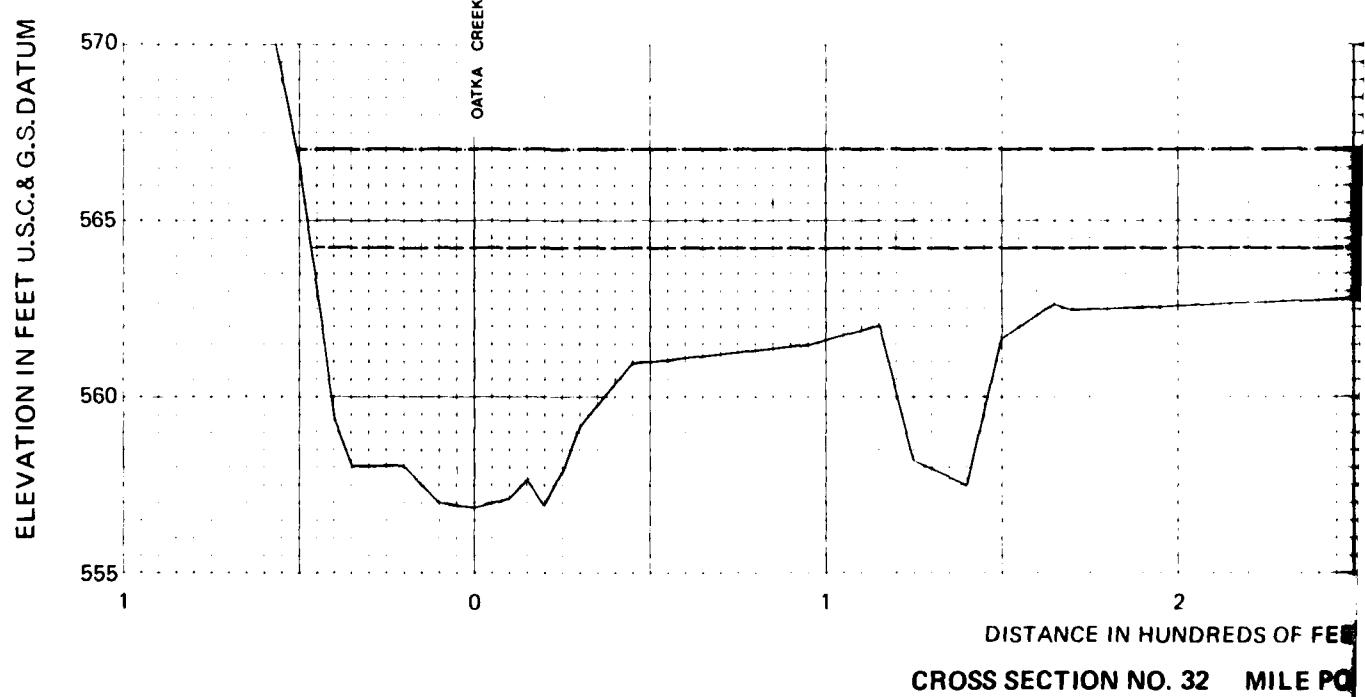
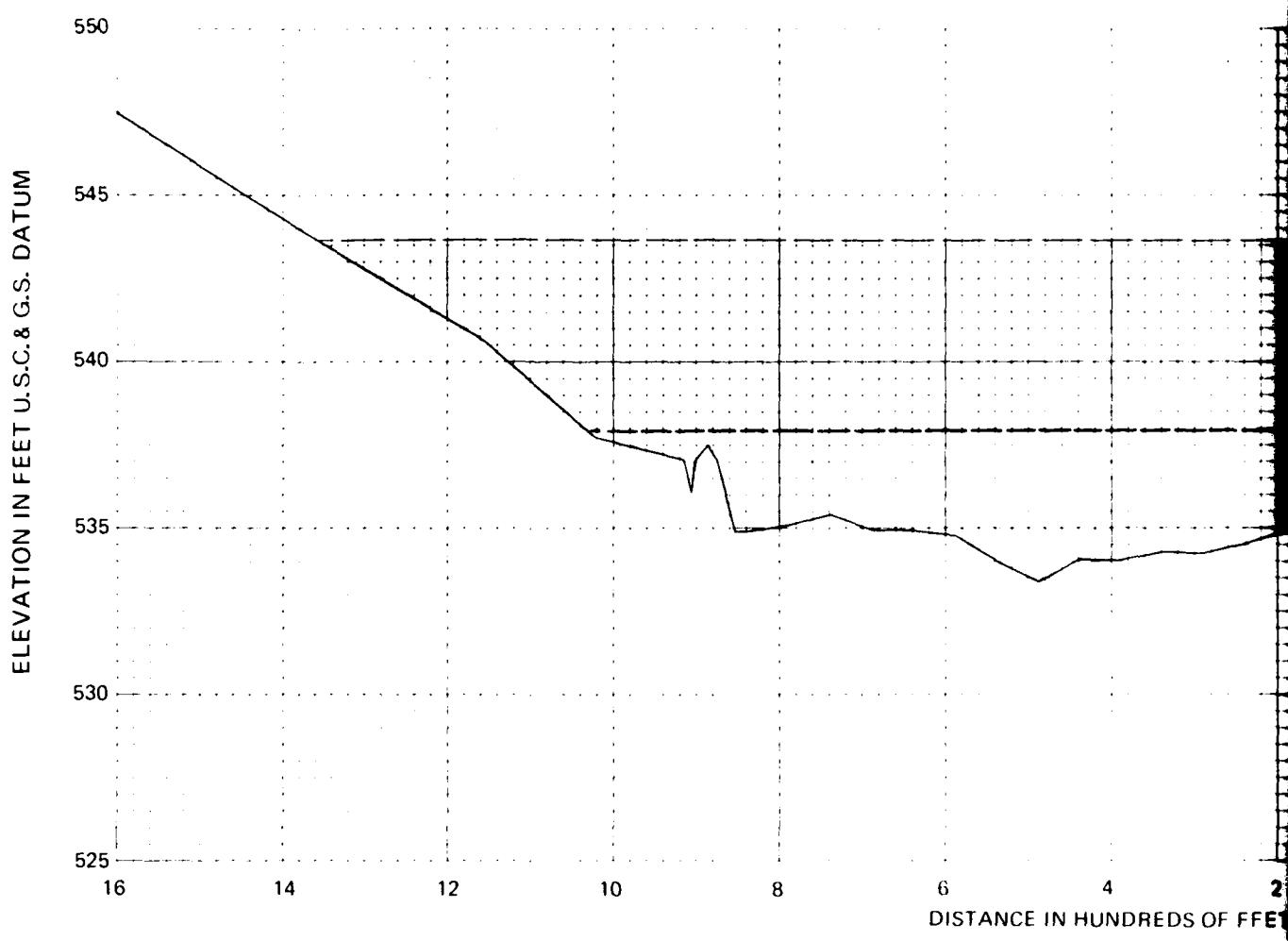
INTERMEDIATE REGIONAL FLOOD ———

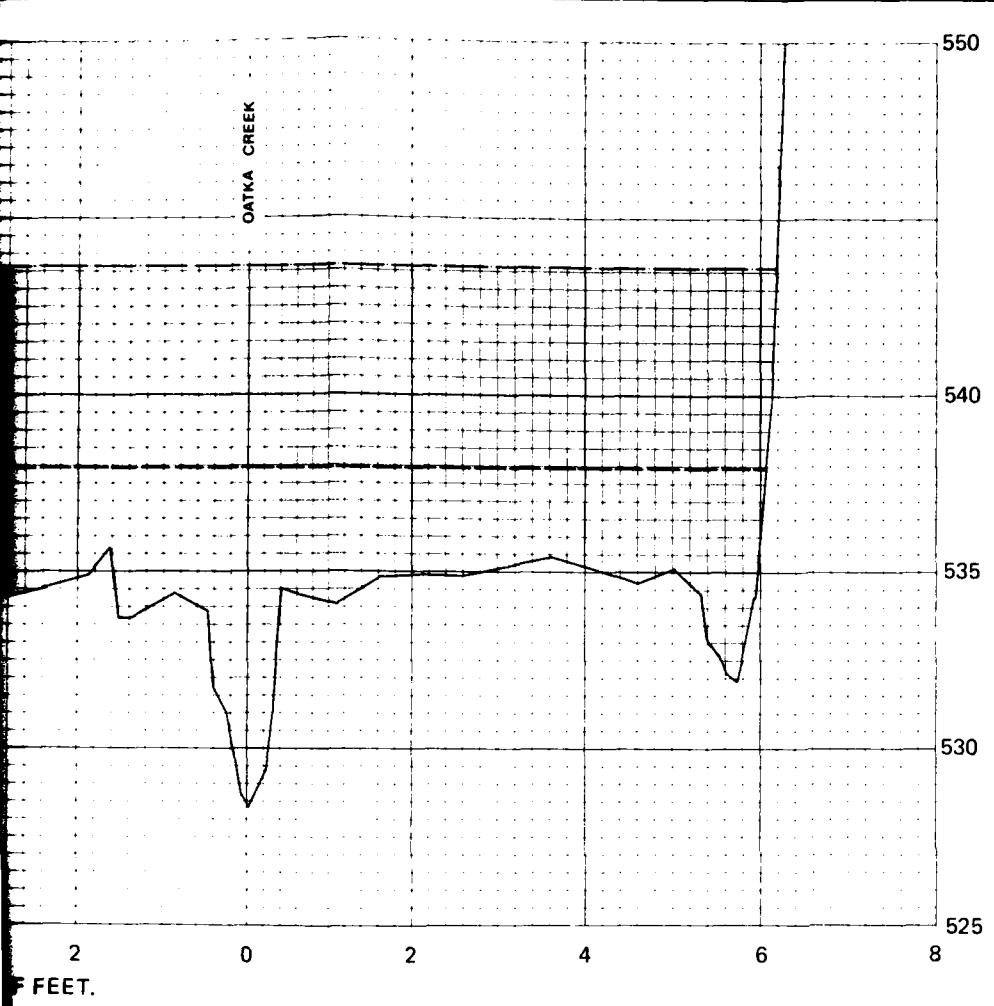
APPROXIMATE GROUND SURFACE ———

NOTES:

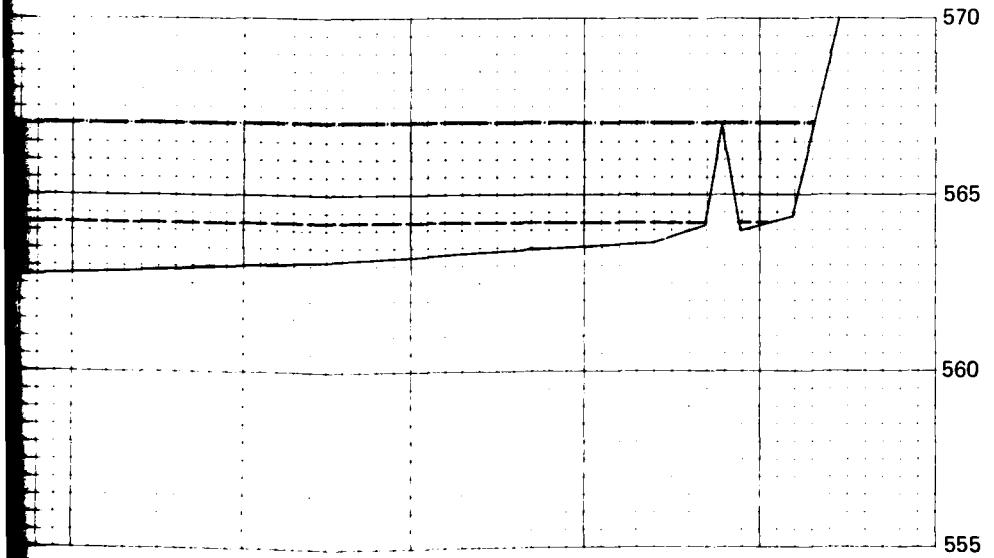
1. Valley cross sections are based on actual field Surveys and U.S.G.S. quadrangle Maps.
2. Valley cross Sections are looking down stream and are located on plate number.

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FLOOD PLAIN INFORMATION
OATKA CREEK AND GENESEE RIVER
TOWN OF WHEATLAND
VALLEY CROSS SECTION
GENESEE RIVER
APRIL 1973





POINT 1.7



POINT 3.4

LEGEND

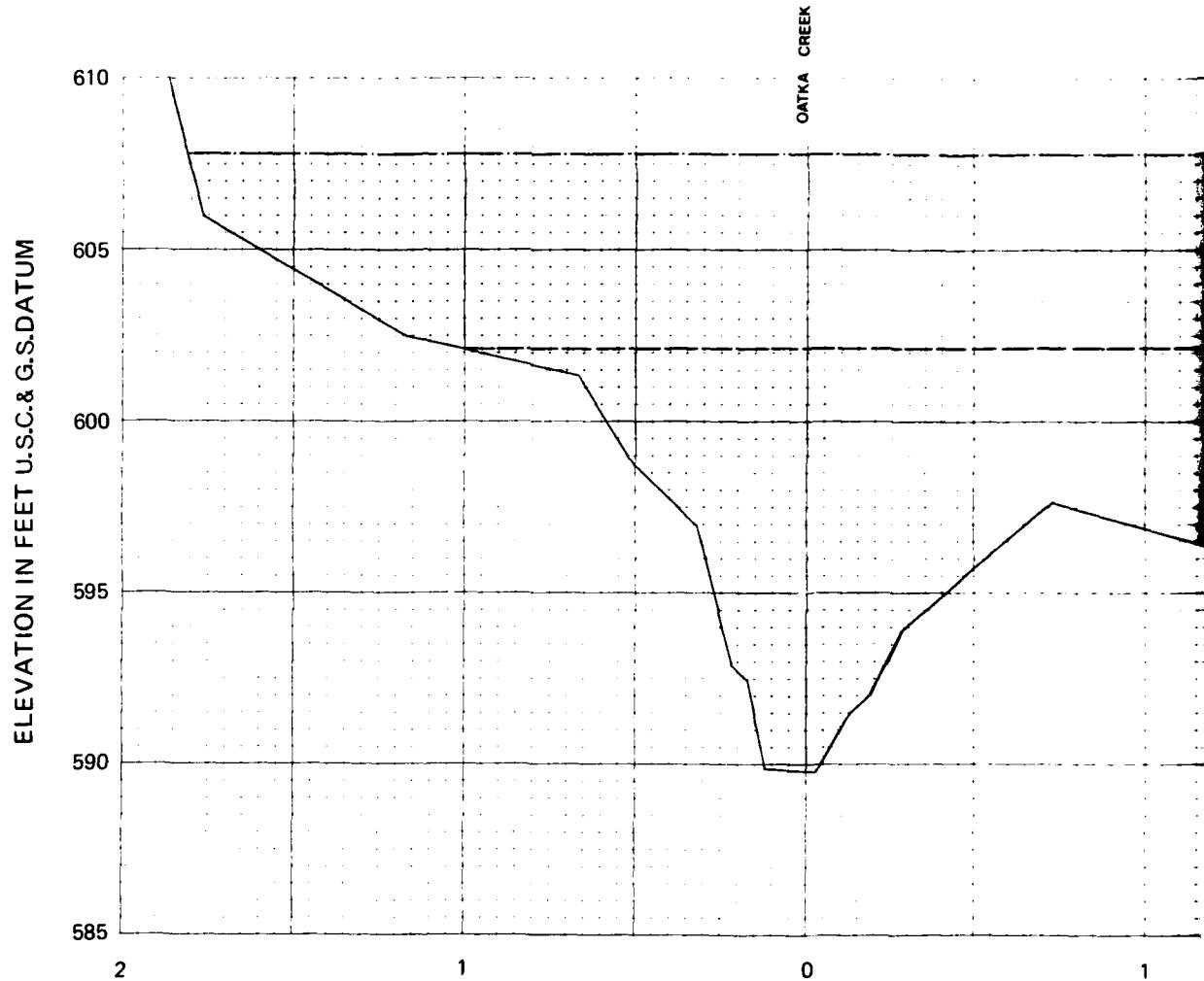
- STANDARD REGIONAL FLOOD -----
- INTERMEDIATE REGIONAL FLOOD - - - -
- APPROXIMATE GROUND SURFACE —————

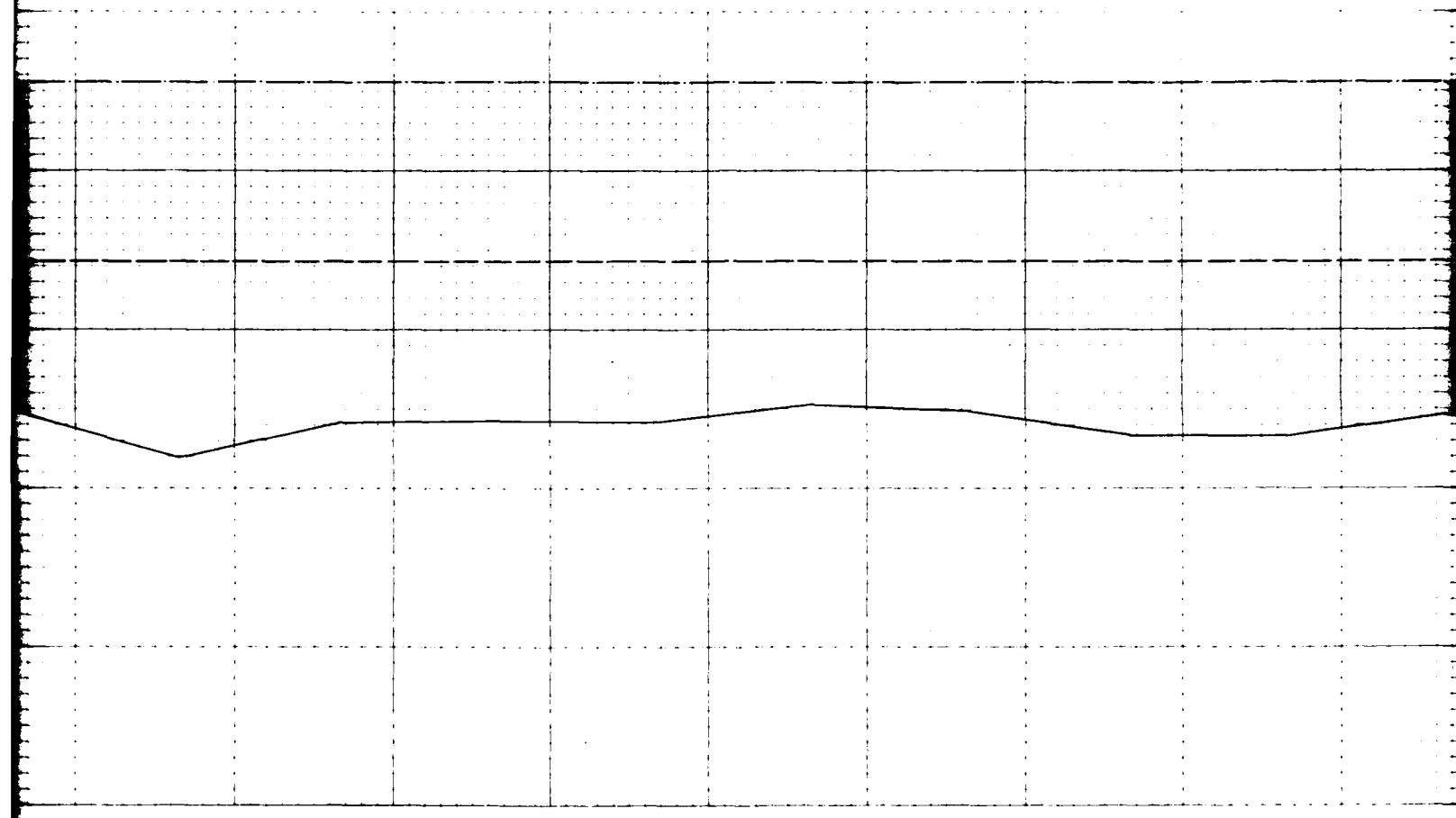
NOTES:

1. Valley cross sections are based on actual field Surveys and U.S.G.S. quadrangle Maps.
2. Valley cross Sections are looking down stream and are located on plate number.5

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FLOOD PLAIN INFORMATION
OATKA CREEK AND GENESEE RIVER
TOWN OF WHEATLAND

VALLEY CROSS SECTION
OATKA CREEK
APRIL 1973





1

2

3

4

5

DISTANCE IN HUNDREDS OF FEET.

CROSS SECTION NO. 50
MILE POINT 7.2

LEGEND

STANDARD REGIONAL FLOOD - - -

INTERMEDIATE REGIONAL FLOOD - - -

APPROXIMATE GROUND SURFACE - - -

605

600

NOTES:

1. Valley cross sections are based on actual field Surveys and U.S.G.S. quadrangle Maps.
2. Valley cross Sections are looking down stream and are located on plate number 6

590

585

6 +50

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FLOOD PLAIN INFORMATION
OATKA CREEK AND GENESEE RIVER

VALLEY CROSS SECTION
TOWN OF WHEATLAND

APRIL 1973

